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DEPARTMENT OF THE INTERIOR
ALBERT B. FALL, SECRETARY
UNITED STATES RECLAMATION SERVICE
ARTHUR P. DAVIS, Director

Clemson University
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TWENTY-FIRST ANNUAL REPORT

OF THE

RECLAMATION SERVICE

Transmitted to Congress in pursuance of the Act of
June 17, 1902 (32 Stat., 388)

1921-1922

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Principal irrigation projects constructed and under construction by the United States Reclamation Service.

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GENERAL DISCUSSION.

The 17th day of June, 1922, completed 20 years of the operation of the national reclamation act, approved June 17, 1902. The present report therefore presents an appropriate opportunity for consideration of the results of the operations under that act.

The original act has been supplemented by many amendments modifying or extending its provisions and the sum total of these enactments is known as the reclamation law. This law provides that the receipts from the sales of public lands, with small exception, and a percentage of the royalties from the production of oil, gas, potassium, etc., be paid into a fund known as the reclamation fund and used in the survey, construction, and operation of reclamation projects in the arid and semiarid States. The investment in construction during this period has been in round numbers $135,000,000, of which about $13,000,000 has been repaid.

This investment has accomplished the construction of works by which about 1,675,000 acres have been furnished with a complete water supply and about 1,100,000 additional acres have been furnished a supplemental supply under the provisions of the Warren Act. The latter are areas included in private or district projects and are not usually designated as Government projects. On the Government projects proper the area given comprises 31,462 farms, or an average area per farm of about 53 acres and these farms support upward of 30,000 families.

With the investment mentioned the service has excavated over 200,000,000 cubic yards of earth and rock, of which about 14,000,000 yards have been placed in dams, and canals have been built aggregating over 13,000 miles in length, including 27 miles of tunnels and 135 miles of flumes. The structures of all kinds and sizes number over 110,000. Some of the larger works constructed are the Roosevelt Dam in Arizona, 280 feet high; the Arrowrock in Idaho, 349 feet high; the Elephant Butte in New Mexico, 306 feet; and the Pathfinder and Shoshone Dams in Wyoming, 218 and 328 feet, respectively.

The works include other dams, canals, tunnels, flumes, drains, power plants, transmission lines, telephone lines, roads, railroads, pumping plants, and a variety of other classes of work incidental to the development of large irrigation projects.

The operation of the canal systems brings the employees of the Reclamation Service in close contact with the farmers and it is possible thus at trivial cost to obtain accurate statistics which are useful in studying the operations of the law. A condensation of these results is given in the adjoined tables and further details are included in the appendix of this report.

Irrigable, irrigated, and cropped acreage, and crop value.

Year.	Irrigable acreage.	Irrigated acreage.	Cropped acreage.	Crop value.
1913	1,181,362	694,142	637,227	$15,676,411
1914	1,240,875	761,271	703,424	16,475,517
1915	1,330,222	814,906	757,613	18,164,452
1916	1,405,452	922,821	858,291	32,815,972
1917	1,502,468	1,026,663	966,784	56,462,313
1918	1,601,934	1,119,566	1,051,193	66,821,396
1919	1,636,159	1,187,255	1,113,469	88,974,137
1920	1,661,960	1,225,480	1,153,820	66,171,650
1921	1,674,100	1,227,500	1,157,900	49,620,300
1922 [1]	1,700,000	1,250,000	1,175,000	.....

[1] Estimated.

The irrigable area in these tables is that acreage on the Government projects proper to which the service is able to deliver water. The difference between this area and that actually irrigated is represented chiefly by small undeveloped portions of the farms that are under cultivation and by the areas occupied by roads, ditches, buildings, etc. The difference between the acreage irrigated and the acreage cropped is accounted for chiefly by young orchard trees and young alfalfa not yet old enough for cropping. There are a few public land homesteads not yet taken on account of roughness or other objectionable qualities, and a few areas in nonresident ownership to which the law does not permit delivery of water, but these are relatively small in area.

The total estimated value of crops raised on the reclamation projects proper exclusive of those served under the Warren Act is about $475,000,000. This does not include any allowance for increased value of live stock, which would increase the above figure, but is difficult to separate from the crop values because largely due to them. A census value of live stock in 1921 upon the projects proper was about $20,000,000.

A table in the appendix contains a list of the special contracts under the Warren Act of February 21, 1911 (36 Stat. 925) entered into during the fiscal year ended June 30, 1922, for the delivery of water to lands in the vicinity of, but not primarily integral parts of, the reclamation projects and also summarizes the totals for previous years.

The reclamation projects have not been exempt from the vicissitudes of industrial conditions, and high prices were enjoyed in the years 1917, 1918, and 1919. They have likewise suffered severely from the rapid decline in values and available markets during the subsequent years, and although the acreage irrigated and cropped has continued to increase, the actual values realized in the last two years are less than those of the previous years. It will be noted by the table that the total values of the crops harvested in 1920 were about the same as those of 1918, although there were 100,000 more acres cropped. When it is remembered that the cost of preparing, seeding, and cultivating the fields was at its maximum when the crop of 1920 was planted, that values had declined before it could be marketed, and that the same principle holds for the crop of 1921, it will readily be realized that the farmers, confronted with heavy expenses and meager returns, were greatly handicapped in carrying on their operations and meeting the payments due the Government.

REPAYMENTS.

The law provides certain rates of repayment and in a general way the time when these become due, although a large measure of discreation is vested in the Secretary of the Interior on the latter point. Payments past due incur penalties fixed by law.

Generally payments fall due in December and necessarily in the large turnover of funds there are always payments that are due and uncollected, increasing suddenly when a new payment falls due and gradually decreasing as payments are made.

The effect of the industrial depression and low prices for farm products upon the collection of the Reclamation Service is shown in the following table:

Total amounts due and unpaid at end of each fiscal year.

Year.	Construction.	Operation and maintenance.	Miscellaneous.	Total.	Per cent uncollected of total construction and operation and maintenance charges accrued.
1922	$2,161,517.22	$2,033,052.26	$436,746.67	$4,631,316.15	15.4
1921	1,123,854.98	1,483,398.96	694,478.70	3,301,732.64	12.3
1920	463,598.72	623,299.59	389,468.56	1,476,366.87	11.1
1919	521,493.55	560,607.77	218,217.30	1,300,318.62	8.0
1918	510,514.78	499,640.90	104,487.48	1,114,643.16	8.7
1917	420,020.55	419,756.93	367,231.34	1,207,008.82	9.8
1916	489,939.54	311,708.89	430,581.52	1,232,229.95	11.9
1915	718,830.94	291,009.91	278,984.44	1,288,825.29	15.6

THE RELIEF ACT.

The financial condition of some of the settlers was recognized by Congress and an act was passed, Public No. 185, approved March 31, 1922, authorizing the Secretary of the Interior to extend the time for payment of charges due on reclamation projects with a reduction of penalties and also to deliver water under certain circumstances to those who were delinquent in payments. In spite of the large losses incurred by all agricultural interests, including irrigated farming, the necessity for relief, though urgent in many cases, has been by no means universal.

It is of interest to review the applications for leniency under the act of March 31 that had been received at Washington when the fiscal year covered by this report had closed. The bulk of the applications were filed by that time, because the irrigation season was then advanced, and in general, the applications were connected with the right to receive water. The law applied to 13 projects upon which public notice had been issued and where the Secretary has authority to grant individual extensions under certain circumstances. Of those 13 projects, there are 5 upon which no applications for extension have been made. These are the Orland project, California, Carlsbad project, New Mexico, Umatilla and Klamath projects in Oregon, the Okanogan project in Washington, and the Sunnyside unit of the Yakima project in the same State. The Orland project in California not only has made no application for extension but has continued its splendid record of having at the present time not one cent deliquent in payment. It is notable

also that on the Newlands project, with 725 water-right applications, only one application for extension was received.

Out of many thousand water users, about 1,200 applications were made and about 1,000 approved, extending the time for payment of about $277,000. This is about 5 per cent of those who might have applied and less than 7 per cent of the possible applicants upon the projects from which the applications were made.

Excluded from the foregoing discussion are several projects upon which public notice has not been issued, and the Rio Grande and Uncompahgre projects upon which it has been issued but has not yet taken effect. The Salt River project also has been excluded, because it was impossible to consider individual applications on that project, as it has been turned over to the water users' association under a contract by which that association operates the project, makes all collections, and is obligated to make all payments. The severe decline in the price of long-staple cotton, which the Salt River Valley was producing so heavily in 1918, 1919, and 1920, led to an acute stringency of financial conditions in that valley, and as individuals were not eligible to receive extensions, arrangements were made with the water users' association directly by which a portion of the payments were extended, under supplemental contract, providing for the payment of all dues and penalties at intervals, with the concluding payment in December, 1923.

All extensions of construction charges bear 6 per cent interest; delinquent charges not extended bear penalties of 1 per cent per month. The slowness with which collections were made, owing to the depression of 1920, had, of course, an immediate effect upon the funds available for construction work, so that in the fiscal year 1920 less than $3,500,000 was available for construction, for not only did large delinquencies occur but the operation of the projects required an outlay of reclamation funds in order to keep crops growing and this absorbed the major portion of the funds which actually were available.

Reclamation fund collections, by months, during fiscal year 1922.

July	$155,485.04	February	$513,396.77
August	113,781.92	March	710,745.02
September	179,981.46	April	400,254.26
October	162,715.88	May	424,078.95
November	360,134.47	June	237,661.56
December	626,288.80		
January	409,983.21	Total	4,294,507.34

The number of applicants for extension privileges is reassuring not only as to the financial condition on the projects but as to the attitude of the water users toward repayment. In some cases where the number of applicants was high, this is due in part to systematic propaganda by which some local interests sought to prevent the payments to the Government, preferring to keep the money at home, but this element has not been as important as the counter propaganda of those who from local pride and sense of honor have sought to discourage such applications and to make local arrangements by which the few unable to pay could be financed and the credit of the community upheld. It is significant also that even on the project, where individual canvass was made to induce applications for extension, the number of applications was only 9 per cent of the total number of water users. The acid test of the industrial depression

just passed has demonstrated beyond any doubt not only the ability but the determination of nearly all of the water users to meet the payments required by law.

ECONOMIC CONDITIONS.

The intensive study of individual and community conditions, which has been brought about by the depression and by the relief act, has brought out some interesting and instructive facts which, elucidated by statistics of the reclamation farm census, should be useful in reestablishing and maintaining prosperity upon the projects.

One fact of importance is that owing to a combination of conditions a large number of the water users abandoned the occupation of dairying to raise crops offering a higher immediate return. The first of these was cotton, affecting the most southern projects of the service. Next came sugar beets affecting many of the northern projects, and the high price of grain also had its effect on nearly all. To raise these crops alfalfa fields were plowed under and dairy herds were sacrificed, the dairy business being still further hampered by the high price of forage which followed. The sudden collapse of the market for the above favored products left the farmers with unsalable crops which had been raised at exceptionally high cost and even after the return of more normal times the condition can be remedied only by gradually returning to that most reliable of all farm industries on the projects, the dairy industry. This requires capital, skilled management, hard labor, and close application; but the projects are meeting the problem manfully and the dairy business is again coming into its own. Another fact brought out by the census study is the influence of the size of farms upon the crop values per acre and per farm.

A comparison of the projects on the basis of the average size of the cropped acreage per farm shows that on 24 projects from which statistics are available the one having the highest valuation of crops per acre and per farm is the Okanogan project in the State of Washington, where the average size of holding is only 12 acres and the gross value of product averages over $300 per acre. Next in order is the Yakima project, where the average holding is 25 acres and the average gross production a little over $100 per acre.

Dividing the projects into two groups we find that the 11 projects having the lowest acreage production had a cropped area per farm in 1921 averaging 54.6 acres and produced crops to the value of only $19.57 per acre, or $1,069 per farm. In contrast with these figures the combined statistics for the Umatilla, Grand Valley, Rio Grande, Strawberry Valley, Minidoka, Yuma, Boise, Uncompahgre, Carlsbad, Orland, Salt River, Yakima, and Okanogan projects show that their average cropped acreage per farm was only 31.9 acres, but that they produced crops to the average value of $53.72 per acre, or $1,715 per farm. These are summarized in the following table:

	First group.	Second group.
Acreage cropped	368,520	789,380
Value of crops	$7,214,280	$42,406,020
Number of farms	6,744	24,718
Average cropped acreage per farm	54.6	31.9
Average crop value per acre	$19.57	$53.72
Average crop value per farm	$1,069	$1,715

This illustrates the well-known fact demonstrated over and over again that irrigation farming to be successful must be intensive and that the means of the average settler enable him to handle properly an acreage that would be considered small in nonirrigated regions.

PROJECT OPERATIONS.

During the past year construction, operation, and maintenance of irrigation works have continued on 25 projects according to the provisions of the reclamation law.

In Arizona the Salt River project is operated by the water users' association under a contract with the Secretary of the Interior, under which the association assumes the management and operation of the project, and also the responsibility for any additions and extensions deemed desirable. Under the provisions of this contract the association has expended over $1,000,000 upon drainage much needed in parts of the project. Where ground water is high, wells are provided and equipped with pumps to be operated by electricity developed on the project. The current can be used when not needed for other purposes, and its delivery thus stabilized. The pumps deliver the drainage water into the ditches, from which it is used for irrigation.

The Yuma project proper, Arizona-California, is operated by the Reclamation Service, and construction work has been confined mainly to extension of the drainage system. The annual menace of the floods of the Colorado is expensive, though by elaborate precautions and vigilance damage was averted this year. The Yuma Mesa auxiliary project was so far advanced that the delivery of pumped water on the mesa was begun in 1922. This enterprise is greatly handicapped by the high price of electric power necessary for the pumps. The development of power on the project is contemplated for this purpose.

The Orland project in California has continued its unique record of allowing no delinquencies of payment in either operation and maintenance or construction. Some lateral lining, to avoid seepage losses, was accomplished during the year.

The Grand Valley project, Colorado, is being operated on a rental basis, but the development is slow. No construction work was done except a few lateral extensions and the completion of drainage excavation done in cooperation with an adjoining district.

On the Uncompahgre project, Colorado, public notice has been issued, and will take effect December 1, 1922, as provided in the contract of four years ago. Some lateral improvement and extension is the only construction done during the past year.

In Idaho the Boise project was operated under public notice, in accordance with a court decree resulting from a suit brought for the water users to test the validity of the charges. The decree provides fully for the return of all moneys invested in the project and contemplates that money expended on drainage shall be collected in advance as operation and maintenance charges. Only a small amount has been thus advanced, and drainage is badly needed in a part of the valley.

On the King Hill project, Idaho, some important structures were built and the work covered by the contract with the project district is about three-fourths completed. This is reconstruction of a system failing under private development, substituting concrete for wood and otherwise improving the original construction.

The gravity portion of the Minidoka project, Idaho, is operated by an irrigation district, which is successfully conducted and prosperous. The pumping division is operated by the Government. No construction work has been done on these divisions during the past year. An extension for pumping to a tract of fine land north of the gravity division has been under investigation and contemplation for some years. It requires the construction of a large storage reservoir to provide the necessary water supply. Such a reservoir is found feasible at American Falls, where practically all of the flow from the Upper Snake River Basin can be impounded. It would supply much needed storage water to a large number of canals already in service under private and district management; 32 such organizations have entered into contracts to advance their proportionate cost of the proposed reservoir, and made some preliminary payments. They have been prevented by the prevailing agricultural depression from fully carrying out these contracts, and the work on the reservoir is accordingly suspended. A movement is on foot to form a large district covering the interested canals, and to issue bonds for raising the necessary funds to construct the reservoir. This movement appears promising.

The Huntley project in Montana was completed years ago and is operated under public notice, but negotiations are under way which it is hoped will result in the assumption of its operation by the water users.

The Milk River project, Montana, is still on a rental basis. Current construction work comprises the enlargement of the Nelson Reservoir and some lateral extensions.

The Fort Shaw division of the Sun River project, Montana, has been operated under public notice for some years. A portion of it needs drainage, but the settlers have not complied with the conditions necessary to correct it. When the canal system on the north side was under construction the settlers holding entries of public lands protested vigorously against its construction, declaring that irrigation was not necessary and not desired and demanded repeatedly that the work be stopped. In view of this attitude no steps have been taken to provide storage. The canals and laterals are capable of serving over 30,000 acres of land with the flood waters of May, June, and July, and in some years there is a season's supply for this acreage from the natural flow of Sun River. This water is being delivered to those desiring to use it on a rental basis, and is of substantial benefit.

The Lower Yellowstone project is interstate, and two irrigation districts have been formed, one in Montana and one in North Dakota. Both have entered into contracts with the Government to repay the construction costs.

The North Platte project is interstate and is one of the largest yet undertaken. Water is stored in the Pathfinder Reservoir, and diverted at Whalen in Wyoming for lands in that State and Nebraska. It serves about 180,000 acres on the north side of the river from a series of canals and small reservoirs which are nearly completed. Work is in progress on the canal system on the south side, which will serve about 100,000 acres, and a portion of the lands under this system have been opened to entry and settled by ex-soldiers. A large number of private canals have been served with water stored in Pathfinder Reservoir, and to serve the completed project another reservoir above Guernsey, Wyo., is contemplated.

The Newlands project in Nevada is being operated under public notice. Drainage is needed and a contract with the irrigation district has been ratified under which drainage works are being constructed, and the results are satisfactory. Further storage is needed, and a reservoir is contemplated for the conservation of the waters of the Truckee River in a site to be built in Spanish Springs Valley, north of Reno. This will serve the lands that are too high to be served by the Lahontan Reservoir already built on the Carson River for the lower lands.

The Carlsbad project in New Mexico is completed and is being operated under public notice. Investigations are under way to ascertain the feasibility of an additional reservoir on the Pecos River, to serve additional lands near Fort Sumner and elsewhere.

The Rio Grande project is interstate and international. It serves lands in New Mexico and Texas, and in accordance with treaty provisions delivers stored water from Elephant Butte Reservoir to the Mexican canals opposite El Paso. In compliance with urgent requests from the irrigators the service is gradually taking title to the ancient lateral systems, enlarging them and fitting them with permanent structures to adapt them to the needs of the project. A system of drainage is being provided on this project, under contracts with the irrigation districts which guarantee repayment.

At Williston, N. Dak., the service is operating a pumping project somewhat experimental in its nature and which has not yet demonstrated its ability to pay for itself. Lignite is mined by the service and burned under boilers to generate the power used in the irrigation pumping. From the same plant electric current has been furnished the city for lighting. The income from the latter operation has lessened a deficit on the former. If a favorable contract can not be continued with the city, it will be necessary to discontinue both operations.

The Umatilla project in northern Oregon is operated by the Government. The soil is mostly sandy, but fertile when abundantly watered. A number of private canals antedating the Government project have a supply of water from the natural flow of the river, during the spring, but are greatly in need of a summer supply. This can be furnished by storing the winter waters on McKay Creek, where a reservoir is contemplated for this purpose.

The Klamath project, in southern Oregon and northern California, is being operated under public notice. The diversion of the waters of Lost River into Klamath River is gradually lowering the level of Tule Lake into which Lost River naturally flows. The land uncovered is of excellent quality, and is being provided with canals for irrigation. A large tract of this land will soon be opened to entry. Drainage has been provided for the part of the project needing it, and has been effective. An additional reservoir to serve the upper lands is contemplated in Horsefly Valley. This will further deplete the supply to Tule Lake, and permit evaporation to uncover more land.

The Belle Fourche project in South Dakota is operated by the Reclamation Service under public notice and is nearly completed. Small lateral extensions were the only construction carried on during the past year.

In Utah the Strawberry Valley project has been operated by the United States for years on the basis of public notice involving annual repayments of its construction cost by the irrigators, who are negotiating to take over its management and operation.

The Okanogan project in Washington has suffered shortage of water on account of small precipitation in its basin. Notwithstanding this, it still holds the record for the highest acreage values produced on any project of the Reclamation Service. The reservoir capacity has been enlarged and provisions for pumping have been provided to supplement the water supply.

The Yakima project, Washington, includes two main divisions, the Sunnyside and the Tieton. Both are operated by the Reclamation Service under public notice. In addition to this a large area on the Yakima Indian Reservation is served with water from the reservoirs constructed by the Reclamation Service. Additional storage is needed, and to provide this a large dam is now under construction on the Tieton River, which will be one of the largest structures built by this service. This will require two more years for completion.

The Riverton project in Wyoming is a new project authorized and undertaken by Congress in the Indian appropriation act for 1921. Construction work is being pushed but no land can as yet be irrigated.

The Shoshone project in the same State is operated by the Service under public notice. Drainage works are under construction and work is in progress on a diversion dam and canal system to serve the lands of the Willwood division south of the Shoshone River. A small power plant at Shoshone Dam was completed the past year, to furnish power for construction purposes.

Irrigation and crop results, Government reclamation projects, 1921.[1]

State and project.	Lands on projects proper covered by crop census.					Other lands served by Government works, usually a partial water supply through private canals under Warren Act contracts.					
				Crop value.					Crop value.		Approximate percentage of total water used supplied by United States.
	Irrigable acreage.[2]	Irrigated acreage.	Cropped acreage.[3]	Total.	Per acre.	Irrigable acreage.	Irrigated acreage.	Cropped acreage.	Total.	Average per acre.	
Arizona:											
Salt River[4]	213,000	[5] 202,430	191,000	$11,435,380	$59.87						
Arizona-California:											
Yuma	62,000	52,400	52,400	2,098,060	40.04	4,000	1,500	1,300	$52,000	$40.00	100
California:											
Orland	20,480	14,700	11,450	495,810	43.30						
Colorado:											
Grand Valley	35,000	12,300	11,390	356,730	31.32	8,350	7,900	7,800	1,175,000	151.00	100
Uncompahgre	100,000	63,760	63,600	2,614,300	41.10	420	360	360	48,400	134.00	
Idaho:											
Boise	143,000	111,500	103,340	4,203,940	40.68	140,000	130,200	125,800	4,675,700	37.17	29
King Hill[6]	13,650	5,900	5,390	119,210	22.20						
Minidoka						630,000	580,000	560,000	18,548,750	33.12	16
Gravity division[7]	72,590	60,650	57,400	1,641,140	28.59						
Pumping division	48,970	46,580	43,320	1,768,140	40.81						
Montana:											
Huntley	31,630	18,800	18,440	440,770	23.90						
Milk River[8]	69,200	16,400	16,110	129,830	8.06	28,300	26,000	23,800	228,250	9.60	
Sun River:											
Fort Shaw division[9]	14,260	8,910	8,700	117,440	13.49						
Greenfields division[10]	19,420	12,840	12,390	172,940	13.96						
Montana-North Dakota:											
Lower Yellowstone[11]	42,170	19,980	19,980	304,220	15.23						
Nebraska-Wyoming:											
North Platte						105,400	87,400	84,400	3,275,500	37.48	42½
North Platte Canal & Colonization Co. lands	15,000	11,020	10,890	330,980	30.40						
Interstate division	115,000	86,380	85,580	2,406,920	28.12						
Fort Laramie division	16,000	12,150	12,140	188,930	15.56						
Northport division	2,500	2,250	1,800	35,900	20.00						
Nevada:											
Newlands	72,200	46,160	43,440	1,254,580	[12] 35.57						

New Mexico:											
Carlsbad	25,000	23,810	21,620	$919,650	$42.53						
New Mexico-Texas:											
Rio Grande	115,000	85,580	77,660	2,493,710	32.11	70,000	36,000	36,000	$873,000	$24.17	100
North Dakota:											
North Dakota pumping	7,650	2,080	1,960	54,320	27.70						
Oregon:											
Umatilla	24,400	13,150	11,610	343,890	29.62						
Oregon-California:											
Klamath	50,000	36,100	32,720	431,950	13.20	15,000	21,200	20,000	292,700	14.63	
South Dakota:											
Belle Fourche	82,360	55,100	55,100	513,750	9.32	40	40	40	330	7.50	100
Utah:											
Strawberry Valley	52,500	32,500	31,380	1,020,590	32.52	17,800	16,300	15,800	536,500	34.00	25
Washington:											
Okanogan	6,500	5,650	5,330	2,051,270	385.00						
Yakima						97,500	94,350	94,250	15,200,000	161.27	46
Sunnyside division	101,500	94,500	80,680	7,797,000	96.65						
Tieton division	32,000	28,500	27,200	3,166,410	116.40						
Wyoming:											
Shoshone—											
Garland division	43,650	34,570	34,170	633,460	18.54						
Frannie division	27,470	10,850	9,710	79,080	8.15						
Total	1,674,100	1,227,500	1,157,900	49,620,300	42.85	1,146,810	1,001,250	969,550	44,906,130	46.84	

[1] Data are for calendar year (irrigation season), except in Salt River project, where data are for corresponding "agricultural year," October, 1920, to September, 1921.
[2] Areas Reclamation Service was prepared to supply water.
[3] Irrigated crops. Excludes small areas on few projects cropped by dry farming.
[4] Data furnished by Salt River Valley Water Users' Association, which operated the project.
[5] Includes 5,536 acres reported as vacant, 3,032 acres of "home tracts" and 2,862 acres within townsites, on which no crops were reported.
[6] Data furnished by King Hill irrigation district. The project was built under private auspices and is under reconstruction by the United States.
[7] Data furnished by Minidoka irrigation district, which operated the division.
[8] Crop reports covered an additional area of 12,490 acres cropped by dry farming, producing crops worth $142,300, or $11.40 per acre.
[9] Figures are for 208 irrigated farms, covering an irrigated acreage of 8,880, in addition to which there were irrigated in townsites 22 acres, and for miscellaneous purposes, 8 acres. In addition, four units farmed "dry," reported 30 acres of alfalfa, $120; 5 acres of oats, $40; 10 acres of pasture, $50; 60 acres of wheat, $756.
[10] Figures are for 169 irrigated farms, all but 450 acres of which produced crops.
[11] Crop reports covered an additional area of 9,680 acres cropped by dry farming, producing crops worth $80,600, or $8.33 per acre.
[12] For crops in full production, excluding 7,874 acres of wild grass pasture and 3,170 acres otherwise not in full production. For all crops, $28.88.

Summary of crop reports on reclamation projects in 1921.

NOTE.—These figures are limited to irrigated crops covered by crop census on Government projects proper, excluding dry-farm crops and all crops in most areas served stored water under the Warren Act.

Crop.	Acreage cropped.		Yields.			Crop value.		
	Total.	Per cent.	Unit.	Total.	Average per acre.	Average per acre.	Total.	Per cent.
Cereals:								
Barley	33,574	2.9	Bushels.	1,080,310	32	$16.66	$559,327	1.1
Corn	52,506	4.6	...do.....	1,301,707	25	14.65	769,228	1.6
Oats	55,427	9.8	...do.....	1,601,124	29	10.42	577,787	1.2
Rye	1,511	.1	...do.....	20,253	13	8.61	13,011	.....
Wheat	156,621	13.6	...do.....	3,655,728	23	26.29	3,116,862	6.3
Total	299,639	26	.....	7,659,122	26	16.80	5,036,215	10.2
Other grain and seed:								
Alfalfa seed	19,571	1.7	Bushels.	69,093	3.5	29.20	571,447	1.2
Clover seed	10,804	.9	...do.....	50,947	4.7	36.40	393,316	.8
Grain sorghum	36,548	3.2	...do.....	1,246,889	34	21.14	772,615	1.5
Flaxseed	376	.....	...do.....	1,534	4	6	2,232	.....
Millet seed	243	.....	...do.....	1,769	7	7.20	1,747	.....
Total	67,542	5.8	.....	1,370,232	.....	25.76	1,741,357	3.5
Hay and forage:								
Alfalfa hay	460,523	39.8	Tons....	1,418,950	3	23	10,505,944	21.2
Clover hay	10,998	.9	...do.....	18,022	1.7	7	75,541	.1
Other hay	28,345	2.4	...do.....	53,079	1.8	14.55	412,475	.9
Corn fodder	5,426	.5	...do.....	19,654	3.6	13	70,391	.1
Other forage	4,119	.4	...do.....	12,901	3.1	20.91	86,130	.2
Pasture	122,418	10.6	.....	.....	.....	9.13	1,118,086	2.2
Total	631,829	54.6	.....	.....	.....	19.42	12,268,567	24.7
Vegetables and truck:								
Beans	2,564	.2	Bushels.	38,302	15	48	122,470	.3
Onions	573	.....	...do.....	175,411	306	446	255,536	.5
Potatoes, white	51,559	4.5	...do.....	9,914,040	192	142.86	7,366,051	14.8
Potatoes, sweet	702	.....	...do.....	107,029	152	123.77	86,890	.2
Truck	19,506	1.7	.....	.....	.....	119.61	2,333,174	4.7
Total	74,904	6.4	.....	.....	.....	135.70	10,164,121	20.5
Fruits and nuts:								
Apples	27,560	2.4	Pounds	238,317,915	8.647	288.97	7,964,106	16
Peaches	1,980	.1	...do.....	10,333,637	5.219	200	396,428	.8
Pears	3,747	.4	...do.....	18,046,108	4.816	135.40	507,284	1.2
Prunes	1,186	.1	...do.....	5,292,962	4.464	145	171,846	.3
Citrus fruits	1,818	.1	...do.....	12,073,800	6.641	365.07	663,702	1.3
Small fruits	1,545	.1	...do.....	4,082,937	2.643	333.13	514,689	1
Miscellaneous	2,669	.2	...do.....	8,242,000	3.088	122.74	327,592	.6
Total	40,505	3.4	.....	296,389,359	7.317	260.35	10,545,647	21.2
Miscellaneous:								
Sugar beets	40,895	3.5	Tons....	423,442	10.3	66	2,690,001	5.4
Cotton	102,087	9.0	Pounds .	8,890,210	87	65.51	6,688,195	13.5
Cotton seed				66,420,800	650			
Cane	1,953	.1	Tons....	6,364	3.2	20.83	40,683	.1
Other crops	8,268	.7	.....	.....	.....	53.88	445,514	.9
Total	153,203	13.3	.....	.....	.....	64.39	9,864,393	19.9
Duplication	109,722	9.5	.....	.....	.....	.....	.....	.....
All crops	1,157,900	100.0	.....	.....	.....	42.85	49,620,300	100.0

SUMMARY OF CONSTRUCTION RESULTS, JUNE 30, 1922.

Items.	To June 30, 1922.	To June 30, 1921.	Increase.
Reservoir capacity available (original)	*Acre-feet.* 9,679,798	*Acre-feet.* 9,600,423	*Acre-feet.* 79,375
CANALS, DITCHES, AND DRAINS.			
	Miles.	*Miles.*	*Miles.*
Canals over 800 second-feet capacity	506	472	34
Canals 301 to 800 second-feet capacity	678	678	.....
Canals 50 to 300 second-feet capacity	2,086	2,036	50
Canals less than 50 second-feet capacity	8,310	8,072	238
Total canals	11,580	11,258	322
Waste-water ditches	809	732	77
Drains, open	1,015	867	148
Drains, closed	189	189	.....
Total	2,013	1,788	225
Grand total	13,593	13,046	547
TUNNELS.			
Number	101	96	5
Length (feet)	145,436	144,429	1,007
STORAGE AND DIVERSION DAMS.			
	Cubic yards.	*Cubic yards.*	*Cubic yards.*
Masonry	2,102,463	2,089,096	13,367
Earth	11,102,524	10,669,414	433,110
Rockfill and crib	1,285,589	1,211,499	74,090
Total	14,490,576	13,970,009	520,567

	To June 30, 1922.		To June 30, 1921.		Increase.	
DIKES AND LEVEES.						
Length and volume	*Feet.* 649,397	*Cu. yds.* 4,719,186	*Feet.* 601,914	*Cu. yds.* 4,576,891	*Feet.* 47,483	*Cu. yds.* 142,295
	Concrete.	Wood.	Concrete.	Wood.	Concrete.	Wood.
CANAL STRUCTURES.						
	Number.	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*
Costing over $2,000	1,207	209	1,153	209	54	.....
Costing $500 to $2,000	2,675	762	2,572	658	103	104
Costing $100 to $500	12,705	7,826	11,225	6,924	1,480	902
Costing less than $100	23,186	68,887	20,519	65,422	2,667	3,465
Total	39,773	77,684	35,469	73,213	4,304	4,471
Grand total	117,457		108,682		8,775	
	Number.	Length.	Number.	Length.	Number.	Length.
BRIDGES.						
		Feet.		*Feet.*		*Feet.*
Steel	106	8,664	106	8,579	.....	85
Combination	414	12,542	414	12,542	.....	.....
Wood	7,388	168,112	6,862	155,531	526	12,581
Concrete	352	4,664	352	4,664	.....	.....
Total	8,260	193,982	7,734	181,316	526	12,666
CULVERTS.						
Concrete	2,422	119,777	2,125	106,310	297	13,467
Metal	2,013	70,030	1,761	61,810	252	8,220
Terra cotta	1,705	69,537	1,556	66,362	149	3,175
Wood	4,189	101,801	4,189	101,801	.....	.....
Total	10,329	361,145	9,631	336,283	698	24,862
PIPE.						
	Linear feet.		*Linear feet.*		*Linear feet.*	
Concrete	770,823		683,497		87,326	
Metal	272,810		259,821		12,989	
Terra cotta (tile)	1,428,261		1,384,725		43,536	
Wood	532,240		505,928		26,312	
Total	3,004,134		2,833,971		170,163	

Summary of construction results, June 30, 1922—Continued.

Items.	To June 30, 1922.		To June 30, 1921.		Increase.	
	Number.	Length.	Number.	Length.	Number.	Length.
FLUMES.		*Feet.*		*Feet.*		*Feet.*
Concrete	98	65,121	92	45,125	6	19,996
Metal	1,148	185,067	1,061	174,734	87	10,333
Wood	2,419	477,258	2,351	471,464	68	5,794
Total	3,665	727,446	3,504	691,323	161	36,123
	Concrete.	Wood.	Concrete.	Wood.	Concrete.	Wood.
CANALS LINED.						
Length (miles)	378.50	4.12	353.94	4.12	24.56	.....
Total	382.62		358.06		24.56	
BUILDINGS.	*Number.*		*Number.*		*Number.*	
Offices	99		99		.....	
Residences	715		681		34	
Power plants	31		31		.....	
Pumping stations	165		136		29	
Barns, storehouses, etc	561		551		10	
Total	1,571		1,498		73	
	Number.	Depth.	Number.	Depth.	Number.	Depth.
WELLS.		*Feet.*		*Feet.*		*Feet.*
Number and depth	556	52,821	532	51,435	24	1,386
COMMUNICATIONS.	*Miles.*		*Miles.*		*Miles.*	
Roads	1,038		1,035		3	
Railroads	83		83		.....	
Telephone lines	3,284		3,269		15	
Transmission lines	841		714		127	
Total	5,246		5,101		145	
POWER DEVELOPED.						
Water and steam, horsepower	63,973		60,373		3,600	
EXCAVATION.	*Cubic yards.*		*Cubic yards.*		*Cubic yards.*	
Class 1, earth	180,226,211		168,588,794		11,637,417	
Class 2, indurated material	11,248,053		10,656,971		591,082	
Class 3, rock	9,103,255		8,787,724		315,531	
Total	200,577,519		188,033,489		12,544,030	
RIPRAP (cubic yards)	2,260,756		2,073,073		187,683	
PAVING (square yards)	924,674		889,084		35,590	
CONCRETE (cubic yards)	3,168,403		3,092,888		75,515	
CEMENT (barrels)	3,181,124		3,078,892		102,232	

DRAINAGE.

Estimate of seepage and summary of drainage work to June 30, 1922.

State and project.	Constructed drains.[1]		Estimated area damaged by seepage on June 30, 1922.	Estimated area protected by constructed drains.	Estimated area that will be protected when all drains authorized have been constructed.
	Open.	Closed.			
	Miles.	*Miles.*	*Acres.*	*Acres.*	*Acres.*
Arizona: Salt River [2]					
Arizona-California:					
Yuma—					
Reservation	11.70	4.00		8,000	8,000
Yuma Valley	33.10			29,000	30,000
Colorado:					
Grand Valley—					
Project lands	16.80		600	2,400	2,700
Grand Valley drainage district	38.30	1.00	29,000	10,000	10,000
Teller Institute	2.80			300	300
Frey Drain	1.60			300	300
Uncompahgre [3]		94.00	16,000	9,200	9,200
Idaho:					
Boise—					
Riverside irrigation district	44.10		350	11,400	11,400
Pioneer irrigation district	78.50	.40	300	30,000	30,000
Nampa-Meridian irrigation district	43.70		500	50,000	50,000
Other parts	15.34	.10	6,000	5,000	10,000
King Hill [3]	.30			600	600
Minidoka (gravity division)	109.00		560	30,000	30,000
Montana:					
Flathead (Indian)	.18	2.97	640	1,240	1,240
Huntley	16.73	50.50	1,200	21,500	21,500
Milk River—					
Malta division	1.3		1,520	100	130
Glasgow division			100		
Sun River—					
Fort Shaw division			2,485		
Greenfields division			800		
Montana-North Dakota:					
Lower Yellowstone	4.50	1.10	1,600	1,600	1,600
Nebraska-Wyoming:					
North Platte—					
Interstate division	27.13	14.18	2,460	5,740	8,200
Interstate division [4]	43.26				
Fort Laramie division	34.83		350	100	15,600
Northport division	.48				3,000
Nevada:					
Newlands—					
Carson division	56.51	3.99	13,700	24,000	62,816
Truckee division	6.35		560	1,000	4,448
New Mexico:					
Carlsbad	11.14	3.65	5,500	5,031	5,031
New Mexico-Texas:					
Rio Grande—					
Rincon diivsion	7.30		9,000	3,500	17,000
Leasburg division	46.10		6,000	22,000	31,000
Mesilla division [5]	105.80		4,000	42,000	47,000
El Paso division [6]	85.30		11,000	35,000	55,000
Oregon:					
Umatilla	10.00		300	2,000	2,000
Klamath	100.10	8.00	2,000	28,686	29,686
South Dakota:					
Belle Fourche			3,921		
Utah:					
Strawberry Valley [3]	18.90	71.50	8,500	11,422	19,922
Washington:					
Yakima—					
Sunnyside division [7]	82.85	86.57	10,000	50,357	50,357
Tieton division [7]	6.80	1.20	200	2,068	2,068
Wyoming:					
Shoshone—					
South Garland division	25.67	89.05	800	25,700	26,000
North Garland division	27.04	2.27	3,000	6,000	9,000
West Garland division	1.00	1.24	200	500	500
Frannie division	13.80		3,500	2,400	27,500
Total	1,128.31	435.72	146,646	478,144	633,098

[1] Surface drains and waste ditches not included.
[2] Pumping and drainage plants have produced marked effect in lowering water table in certain areas.
[3] Constructed by landowners, water users, or drainage districts.
[4] Outlet channels, of which 7.74 miles were built by the United States as a part of the project drainage, 17.35 miles by the United States under cooperative contracts, 16.17 miles by the Farmers irrigation district, and 2 miles by the Morrill drainage district.
[5] Includes 1.7 miles of temporary outlet abandoned.
[6] Includes 0.4 mile of temporary outlet to be abandoned.
[7] All drainage work done by county drainage engineer through dainage improvement districts.

POWER AND PUMPING.

Power plants operated by the United States Reclamation Service during the fiscal year 1921-22.

Project.	Name of plant.	Station capacity.	Number of units.	Head.	First cost of plant.	Cost of operation	Estimated depreciation.	Cost per kilowatt-hour, exclusive of depreciation.	Output.	Distribution of power generated (kilowatt hours).			Losses.	Gross power sales.
										Sold to consumers.	Used for irrigation pumping.	Used for other purposes.		
		Kv-a.		*Feet.*					*Kilowatt hours.*					
Boise	Boise	1,875	3	30.0	$167,905.37	$9,592.00	$5,540.00	$0.001678	5,716,098	5,552,476		163,622		$11,000.00
Minidoka	Minidoka	7,000	5	48.21	455,317.40	20,510.22	15,012.00	.000437	46,906,120	21,403,352	21,549,912	633,381	3,319,475	128,913.46
Newlands	Lahontan[1]	1,875	3	110	138,512.00		2,770.24		6,927,350	6,898,562		28,788		21,978.34
North Dakota Pumping.	Williston	1,150	4		176,803.30	69,344.20	3,000.00	.034138	2,031,298	1,093,892	469,639	373,817	93,950	77,424.41
North Platte	Lingle	750	2	105	97,314.00	13,296.55	6,900.00	.005048	2,633,700	897,660		1,203,290	532,750	27,407.19
Okanogan	Power Plant No. 1	187	1	108	11,923.44	785.27		.017766	44,200		44,200			
	Power Plant No. 2	187	1	55	13,931.42	1,420.32		.013335	106,510		106,510			
	Emergency Power Plant No. 3.[2]	187	1		24,279.27									
Rio Grande	Elephant Butte No. 2	187	1	158.23	8,440.00	3,746.18		.048907	76,598			76,598		
Salt River[3]	Arizona Falls	1,050	2	19	109,500.73	7,273.14	5,475.00	.002869	2,535,200					
	Chandler	600	1	40	91,990.84	11,081.50	4,599.54	.003243	3,416,900					
	Crosscut	5,250	6	111	755,147.29	31,162.35	37,757.36	.001842	16,914,400	[4] 60,424,523	9,461,811	64,411	6,060,049	554,305.56
	Roosevelt	11,750	6	80–225	870,317.94	90,882.67	43,515.90	.001875	48,199,000					
	South Consolidated	2,000	2	23	163,139.60	10,527.03	8,156.98	.002091	5,035,400					
Shoshone	Shoshone	2,000	2	140–220	577,667.00	1,625.00	3,788.00	.021494	75,600	17,600		24,820	33,200	812.10
Strawberry Valley	Spanish Fork	1,000	2	123.5	60,724.80	15,669.38	3,033.72	.011621	1,347,538	1,131,747		143,501	72,290	22,035.51
Yakima-Storage	Tieton No. 1	270	2	45	40,000.00	473.94	1,006.32	.005275	89,850			89,850		
	Tieton No. 2	1,000	2	74	76,758.16	9,295.81	18,474.56	.004842	1,919,590			1,919,590		
Yakima-Sunnyside	Rocky Ford	187	1	73	23,000.00	[5]	1,056.00		700,100		700,100			

[1] Power plant and transmission line leased to the Canyon Power Co. for 10 years beginning Dec. 1, 1914.
[2] No longer operated, partially dismantled.
[3] Power plants operated by Salt River Valley Water Users' Association.
[4] As all plants feed into common transmission line, segregation is impossible.
[5] Not available.

Principal contracts for the sale of power in force June 30, 1922.

Project.	Name of contractor.	Date of contract.	Date of expiration.	Maximum load.	Rate per kilowatt-hour.	Gross income, fiscal year 1921–22.	Remarks.
				Kilowatts.			
Boise	Idaho Power Co	Apr. 1, 1921	Mar. 31, 1923			$11,000.00	
Minidoka	Amalgamated Sugar Co	May 1, 1922	Feb. 28, 1926	7–67	Minidoka standard	1,297.87	
	City of Burley	Jan. 15, 1920	Jan. 1, 1930	200–3,000	do	51,567.99	
	City of Rupert	do	do	150–2,000	do	26,415.24	
	East End Electric Co	Jan. 23, 1918	Jan. 23, 1928	15	do	1,189.23	
	Ferry Light & Power Co	Mar. 12, 1919	Mar. 12, 1929	15	do	1,001.10	
	Meleher Mining & Milling Co	July 27, 1917	July 27, 1922	120–200	do	3,391.20	
	Minidoka irrigation district	Jan. 27, 1917		Req. of irrig.	$0.003	2,550.47	
	Paul Electric Co	Jan. 20, 1914	Feb. 13, 1924	100–500	Minidoka standard	6,354.10	75 cents per kilowatt month for first 50 kilowatt; heat.
	Rural Electric Co	Nov. 1, 1919	Mar. 31, 1927	11–15	do	1,137.15	Power only.
	Unity Light & Power Co	Mar. 19, 1917	Mar. 19, 1927	30–41	do	2,777.53	
	Village of Albion	Oct. 15, 1915	Jan. 8, 1926	30–100	do	5,010.25	Do.
	Do	Sept. 18, 1916	do	200	$1.25 per kilowatt-month	2,082.50	Heat.
	Village of Declo	Oct. 26, 1920	Nov. 1, 1930	30–41	Minidoka standard	1,887.82	
	Village of Heyburn	Mar. 9, 1920	Jan. 1, 1930	50–200	do	2,026.91	
	55 small contracts					7,893.63	All less than $1,000 per year.
Newlands	Cañon Power Co	July 10, 1914	Nov. 30, 1924	1,500	¼ to ⅜ cents	21,744.39	Minimum monthly charge $1,200, April to September, inclusive.
North Dakota Pumping.	City of Williston, N. Dak	Oct. 16, 1912	Dec. 20, 1922	600	2½ to 5½ cents	51,973.53	
North Platte	City of Mitchell, Nebr	Apr. 28, 1922	Apr. 30, 1924	135	North Platte standard	11,010.73	
	City of Torrington, Wyo	May 10, 1921	May 10, 1923	125	do	10,260.58	
	Platte Valley Power Co	May 1, 1922	June 21, 1929	25	do	25.24	
	Security Land Co	Feb. 9, 1922	Feb. 9, 1927	25	do		No power delivered during fiscal year 1922.
	Village of Lingle, Wyo	Oct. 27, 1919	Oct. 26, 1924	25	do	1,774.86	
	Village of Morrill, Nebr	Apr. 28, 1922	Apr. 30, 1924	55	do	4,263.40	
Shoshone	City of Powell, Wyo	Sept. 21, 1921	Oct. 1, 1923	100	1 cent to 6 cents per kilowatt-hour.	812.10	
Strawberry Valley	Castilla Hot Springs Co	Sept. 6, 1919	Sept. 6, 1924	10	Standard; minimum $15 per month.	201.44	
	Joseph Lucas	Feb. 15, 1922	Feb. 21, 1925	5	9 cents; minimum $3 per month.	36.15	
	Keeler Electric Co	Apr. 9, 1921	Apr. 9, 1926	5	Standard; minimum $7.50 per month.	91.93	
	Mapleton Light & Power Co	May 31, 1919	May 31, 1924	5	do	96.08	
	Payson City	Feb. 3, 1922	Feb. 5, 1925	120		8,485.57	
	Salem City	do	do	40		1,670.61	
	Spanish Fork City	do	do	200		9,661.68	
	Springville City	July 26, 1920	July 26, 1923	125	1 to 2 cents; minimum $50 per month.	1,716.60	

Pumping plants operated by the United States Reclamation Service during fiscal year 1921–22.

Project.	Name of plant.	Type of pumping unit.[1]	Plant capacity.	Number of units.	Net lift.	First cost of plant.	Cost of operation.	Estimated depreciation.	Energy used for pumping.	Acre-feet pumped.	Cost per acre-foot without depreciation.	
											Per acre-foot.	Per foot lift.
			Horsepower.		*Feet.*				*Kilowatt-hours.*			
Grand Valley	Price Stub	V. T. D. C	125	1	31	$46,697.83	$1,202.66	$1,000.00		6,635	$0.18	$0.0058
Huntley	Ballantine	do	620	2	45	73,833.32	2,992.91	2,215.00		10,200	.29	.0065
	Ballantine auxiliary	G. E. D. C	400	2	45	71,153.56	2,901.71	3,510.00		1,870	1.55	.0345
Minidoka	A–4 Raise [2]	Scoop wheel	25	1	3.5	3,328.42		249.63	31,050	2,950		
	Pumping station No. 1	V. M. D. C	2,760	5	29.2	186,020.06	[3] 20,720.90	[3] 19,356.00	[4] 8,177,258	186,283	[5] 5.21	[5] 0.0072
	Pumping station No. 2	do	2,400	4	30.2	184,920.94			[4] 13,372,654	153,805		
	Pumping station No. 3	do	1,560	3	29.9	103,106.96				92,923		
	Boersch Lake [2]	do	200	2	19.8	32,947.72		1,647.39	400,160	12,951		
	C–2 pumping station [2]	Scoop wheel	10	1	2.5	5,008.15		375.61	15,280	2,601		
	114 pumping station [2]	H. M. D. C	7.5	1	7	2,803.97		182.26	10,835	432		
	1812 pumping station [2]	do	5	1	4	1,008.76		65.57	4,623	2,258		
	1817 pumping station [2]	Scoop wheel	10	1	4.8	3,634.71	[6] 7,825.65	272.62	9,190	1,087	[7] 7.27	[7] 0.0182
	West End pumping station [2]	H. M. D. C	150	2	21.25	18,745.61		817.30	387,625	6,604		
North Dakota Pumping.[8]	Pumping station No. 1	S. T. D. C	450	2	56	8,821.00	7,238.10	300.00		1,004	7.21	.1286
	Pumping station No. 2	H. M. D. C	175	2	26.6	14,065.00	6,303.75	800.00	98,300	958	6.58	.2474
	Pumping station No. 3	do	405	3	12–32	39,647.00	12,724.52	1,000.00	140,057	2,386	5.34	.2427
	Pumping station No. 4	do	100	1	25–27	8,821.00	3,908.71	500.00	58,980	628	6.22	.2392
North Platte	Dutch Flat Drain No. 1	V. M. D. C	30	1	41							
	Dutch Flat Drain No. 2	do	20	1	30	33,747.83	5,000.00	1,685.00		1,235	5.41	.1353
	Dutch Flat Drain No. 3	do	20	1	49							
Okanogan	Duck Lake (old) [9]	G. E. D. C	125	1	55	10,858.21						
	Duck Lake (new)	M. D. C	50	1	55	13,981.24	3,292.84		28,114	370	8.89	.1617
	Government wells Nos. 1 and 2 [10]	V. M. D. C	30	2	av. 35	18,588.21	268.52		10,653	78	3.45	.0986
	Robinson Flat	H. M. D. C	200	2	188	30,077.24	14,716.05		871,967	1,372	10.73	.0571
	Salmon Lake [11]	G. E. D. C	150	1	av. 10	17,842.16	5,611.16			808	5.41	.541
Salt River	Chandler division	{10 V. M. D. C 1 H. M. D. C	75 and 35	11	av. 33.56	148,084.21	8,180.70	10,365.89	1,414,938	17,451	.47	.0140
	Highline pumping plant	H. M. D. C	{3–250 1–150	4	47	91,038.90	14,294.10	4,551.94	2,880,618	33,927	.42	.0089
	Mesa division	V. M. D. C	{1–75 15–35	16	20.73	145,047.84	6,334.85	10,153.35	837,578	13,472	.47	.0227
	Phoenix division	do	{10, 20, 25, 35	14	54.57	111,578.39	18,416.01	7,811.49	1,630,408	12,041	1.53	.0280
	Salt River division	do	35	21	av. 29.61	169,318.26	4,840.53	11,852.28	862,658	12,727	.38	.0128
	San Francisco	H. M. D. C	100	1	30	29,978.98	543.13	2,997.90	24,323	293	1.85	.0617
	Tolleson division	V. M. D. C	25 and 35	21	av. 28.42	168,360.75	11,897.87	11,785.25	1,811,288	25,138	.47	.0165

Yakima-Sunnyside.	Grand View [12]	V. T. D. C.	214	1	78	72,500.00	[13]	3,120.00		11,846		
		H. M. D. C.	175	2	78 and 35		[13]					
	Hillcrest [14]	V. T. D. C.	35	1	103	5,800.00	300.00	300.00		400	.75	.0073
	Little Snipes Mountain [15]	H. T. D. C.	5	1	50	1,162.00	200.00	45.00				
	Outlook [16]	V. T. D. C.	800	2	110	92,000.00	3,769.01	2,480.00		16,429	.2294	.0021
	Prosser [16]	H. T. D. C.	190	1	105	31,968.00	1,117.82	1,500.00		3,304	.3383	.0032
	Snipes Mountain [16]	V. T. D. C.	550	2	200	48,500.00	1,940.00	1,890.00		6,511.6	.297	.0015
	Spring Creek [17]	H. T. D. C.	160	1	90	28,050.00	1,351.63	1,500.00		3,672	.368	.0041
Yuma	"B" lift	V. M. D. C.	700	1	69	147,483.49						
	"B" (temporary) [18]	H. M. D. C.	200	1								
	Reservation pumping station	G. E. D. C.	110	2	5.6	6,775.60	2,753.28	300.00		2,000	1.38	.246
	Valley drainage	do	175	2	av. 10	130,751.12	14,737.23	1,637.00		31,969	.46	.046
	West Yuma pumping	do	40	1	7	900.00	618.19	68.00		102.5	6.03	.8614

[1] Type V. M. D. C.= Vertical motor-driven centrifugal pump. H. M. D. C.= Horizontal motor-driven centrifugal pump. S. T. D. C.= Steam turbine-driven centrifugal pump. V. T. D. C.= Vertical hydraulic turbine-driven centrifugal pump. H. T. D. C.= Horizontal hydraulic turbine-driven centrifugal pump. G. E. D. C.= Gas-engine-driven centrifugal pump. G. E. D. C.= Gas-engine-driven centrifugal pump. G. E. D. S.= Gas-engine-driven screw pump.

[2] Operated by Minidoka irrigation district.

[3] Total for 3 South Side stations.

[4] Total for stations 2 and 3.

[5] Average for 3 stations.

[6] Total 7 North Side stations.

[7] Average 7 North Side stations.

[8] For irrigation season 1921.

[9] Operated by 125 horsepower engine; replaced by 50 horsepower motor, spring of 1922.

[10] Present equipment installed spring of 1922.

[11] 125-horsepower motor being brought from Duck Lake.

[12] Operated by Grand View irrigation district.

[13] Not available.

[14] Operated by Snipes Mountain irrigation district.

[15] Operated by irrigation district.

[16] Cost data of doubtful value.

[17] Operated by Prosser irrigation district.

[18] Operated May and June.

ORGANIZATION AND PERSONNEL.

The Federal reclamation law places in the Secretary of the Interior the authority and responsibility for the reclamation work. As the instrument for the execution of such work the Secretary has organized the Reclamation Service, headed by the director, who, with the assistant director, has headquarters at Washington, and who frequently travels to the projects and proposed works in the field. A subordinate headquarters office is maintained at Denver in charge of the chief engineer, who, with two assistant chief engineers, has more immediate contact with all the field work. In the Washington office are conducted those operations that are necessary in dealing with the Secretary, Congress, the Treasury Department, and other Federal agencies, as well as those involving general direction and administration of the work.

At Denver there is a force of technical men for the design of the principal engineering structures, including work of an electrical nature. That is the headquarters point for extensive purchases, and the chief engineer and two assistants alternate in charge of the office and traveling from one project to another to maintain close administration and give prompt advice and decision on engineering and other details.

Each project is in administrative charge of a project manager. The project force includes the necessary engineers, clerical help, and operatives such as gate tenders, ditch riders, and water masters for the work of constructing, operating, and maintaining the irrigation systems, with sufficient common and skilled labor for the work in hand.

The legal work of the Reclamation Service both in the Washington office and in the field is in charge of the chief counsel. There are eight main field offices of the legal division, located, respectively, at Denver, Colo.; Montrose, Colo.; Mitchell, Nebr.; Helena, Mont.; Boise, Idaho; Portland, Oreg.; San Francisco, Calif.; and El Paso, Tex.; and two legal suboffices located, respectively, at American Falls, Idaho, and Las Cruces, N. Mex. The attorneys in charge of these offices are the legal advisers to the various project managers located within their respective districts. In the central Denver office is located a district counsel who is legal adviser to the chief engineer.

On June 30, 1922, the force of the Reclamation Service comprised 3,667 persons, subdivided as follows: Educational, 499; noneducational, 1,080; laborers, 2,088. In addition, the employees of contractors working on reclamation projects numbered 231.

PURCHASES.

Purchases of materials and supplies, 1910–1922.

Fiscal year.	Number of purchases.	Gross amount.	Discount.
1910	1,774	$504,023.60	.....
1911	1,607	574,323.74	.....
1912	2,205	930,018.53	.....
1913	2,735	459,890.17	$4,286.29
1914	3,116	471,446.28	4,604.28
1915	2,854	454,661.46	3,812.09
1916	5,049	680,601.99	6,747.38
1917	4,989	1,095,830.36	13,000.25
1918	6,215	1,809,580.84	17,876.29
1919	5,038	1,489,583.04	8,727.12
1920	3,968	948,270.46	9,523.42
1921	6,599	2,314,782.36	18,383.04
1922	5,892	1,678,919.00	17,153.70
Total	52,041	13,411,931.83	104,143.86

TRANSPORTATION.

Freight and express data.

Fiscal year.	Bills settled.	Commercial charges.	Deducted account of contracts, land grants, and other causes.	
			Total.	Per cent.
1907	$278,782.10	$470,863.26	$192,081.16	40.8
1908	369,583.04	577,803.42	208,247.38	36.0
1909	778,047.12	1,403,970.10	625,922.98	44.5
1910	437,032.61	758,808.76	321,776.15	42.4
1911	405,360.55	666,876.59	261,516.04	39.2
1912	610,740.23	1,055,733.27	444,993.04	42.1
1913	481,118.91	837,077.59	355,958.68	42.5
1914	547,705.99	927,163.49	379,457.50	40.9
1915	778,893.33	1,393,347.96	614,454.63	44.1
1916	471,606.52	817,481.33	345,874.81	42.3
1917	393,477.70	653,013.98	259,536.28	39.7
1918	324,562.28	608,479.63	283,917.35	46.6
1919	331,056.20	534,580.94	203,524.74	38.1
1920	267,303.53	452,101.12	184,797.59	41.9
1921	359,499.56	599,730.66	240,231.10	40.0
1922	411,817.80	737,481.39	325,662.59	44.2
Total	7,246,587.47	12,494,540.49	5,247,952.02	42.0

FINANCES.

APPROPRIATIONS.

The act of June 17, 1902 (32 Stat., 388), commonly known as "The reclamation act," created in the United States Treasury a special fund, known as "The reclamation fund." The accretions to this fund were, in the beginning, altogether from the sale of public lands and fees and commissions. Under the act of February 25, 1920 (41 Stats. 437), the fund was augmented by a certain percentage of the royalties received by the United States on account of potassium and oil leases. These additional accretions, together with the amounts returned by the water users and others and thus made available for reexpenditure, have to a considerable extent offset the decline in the proceeds from the sale of public lands.

Annually Congress authorizes expenditures from the fund for each irrigation project. These appropriations, which are in fact only authorizations, are based upon estimates of the amounts that will accrue to the fund during the year from the sources mentioned. The operations of the service are thus subject to two limitations; first, the available money in the reclamation fund and, second, the expenditure of a maximum amount on a particular project. The appropriation act, however, is usually somewhat elastic in that it permits an interchange of not to exceed 10 per cent between projects, the reexpenditure of certain miscellaneous collections, and in some instances the privilege of carrying over unexpended balances from previous years.

It will be seen from the foregoing that even after appropriations or authorizations have been made by Congress a definite program can not be outlined for the fiscal year. There must first be a careful review of the probable funds available in the light of the most recent data. There is more or less uncertainty as to the income from sale of public lands, oil, and potassium leases as well as repayments by water users. Allotments are therefore made for only a portion of the year based upon what can with reasonable certainty be expected to reach the reclamation fund.

These allotments must not only be limited as described but they must be made to come within the congressional authorizations. To control the situation a set of accounts is maintained, using as a basis for each project the amount specified in the appropriation act, adding thereto the miscellaneous collections, etc., and charging against the totals the expenditures and liabilities.

Following is a statement showing status of the appropriations or authorizations for the fiscal year 1922:

Appropriations, by projects, for the fiscal year 1922, showing increases and decreases authorized, liabilities and expenditures, and balances unencumbered.

Project.	Appropriation act.	Unexpended appropriations previous year.	Special appropriations.[1]	Collections and transfers.	Total authorized.	Liabilities.	Expenditures.	Total liabilities and expenditures.	Balance of appropriation.
Salt River	$1,000.00				$1,000.00				
Yuma	415,000.00		$13,087.14	$68,595.99	496,683.13	$57,053.28	$367,077.43	$424,130.71	
Orland	118,000.00		3,151.39	4,583.96	125,735.35	3,812.08	70,400.97	74,213.05	
Grand Valley	377,000.00		5,146.05	49,621.88	431,767.93	7,279.32	79,951.67	87,230.99	
Uncompahgre	214,000.00		12,200.29	137,202.47	363,402.76	11,164.81	143,597.89	154,762.70	
Boise	1,570,000.00	$128,652.10	70,307.34	54,149.00	1,823,108.44	18,343.99	344,940.02	363,284.01	
King Hill	300,000.00		8,484.69	32,323.16	340,807.85	15,830.66	264,331.22	280,161.88	
Minidoka	1,735,000.00	602,471.61	17,725.19	167,818.23	2,523,015.03	19,868.80	316,064.62	335,933.42	
Huntley	198,000.00		2,235.31	9,957.51	210,192.82	7,016.71	43,371.82	50,388.53	
Milk River	979,000.00		11,340.11	34,814.59	1,025,154.70	72,532.95	228,123.84	300,656.79	
Milk River (St. Mary Storage)	38,000.00		2,165.63	13,550.75	53,716.38	1,507.74	31,439.51	32,947.25	
Sun River	687,000.00		5,460.11	14,040.61	706,500.72	10,704.90	109,161.43	119,866.33	
Lower Yellowstone	340,000.00		16,827.37	4,131.42	360,958.79	72,487.51	188,636.27	261,123.78	
North Platte	2,115,000.00		30,760.94	127,886.37	2,273,647.31	118,581.31	1,219,482.44	1,338,063.75	
Newlands	1,488,000.00		11,203.86	33,581.71	1,532,785.57	38,001.30	362,794.95	400,796.25	
Carlsbad	100,000.00		2,945.37	7,529.11	110,474.48	4,001.19	49,095.23	53,096.42	
Rio Grande	1,900,000.00		35,448.90	74,121.47	2,009,570.37	53,379.19	783,791.59	837,170.78	
North Dakota pumping	115,000.00		2,663.24	56,322.76	173,986.00	3,747.15	65,944.92	69,692.07	
Deschutes	400,000.00		40.78	.15	400,040.93		8,351.84	8,351.84	
Umatilla	467,000.00		4,783.34	6,969.32	478,752.66	3,371.62	132,665.55	136,037.17	
Klamath	1,213,000.00		8,226.21	30,036.83	1,251,263.04	33,359.27	347,330.26	380,689.53	
Belle Fourche	485,000.00		43,003.42	5,361.60	533,365.02	4,084.95	122,755.34	126,840.29	
Strawberry Valley	144,000.00		3,802.37	38,965.00	186,767.37	2,019.20	83,031.78	85,050.98	
Okanogan	33,000.00	441,107.36	3,251.29	14,725.86	492,084.51	16,606.51	98,380.85	114,987.36	
Yakima	2,100,000.00		30,116.06	68,376.98	2,198,493.04	95,056.00	1,030,574.21	1,125,630.21	
Riverton	850,000.00		4,922.22	2,072.27	856,994.49	33,655.28	363,016.77	396,672.05	
Shoshone	1,784,000.00		17,190.56	11,358.84	1,812,549.40	104,490.80	787,903.38	892,394.18	
Secondary	100,000.00	22,259.83	5,861.84	190,976.63	319,098.30	20,202.17	208,225.93	228,428.10	
	20,266,000.00	1,194,490.90	372,351.02	1,259,074.47	23,091,916.39	828,158.69	7,850,441.73	8,678,600.42	
INDIAN PROJECTS.									
Flathead	200,000.00	178,256.88	9,899.23	39,270.71	427,426.82	35,548.52	194,599.15	230,147.67	$197,279.15
Blackfeet	24,000.00		2,025.07	12,766.54	38,791.61	8,170.67	30,620.94	38,791.61	
Fort Peck	20,000.00		1,009.54	11,660.64	32,670.18	296.19	20,602.74	20,898.93	11,771.25
	244,000.00	178,256.88	12,933.84	63,697.89	498,888.61	44,015.38	245,822.83	289,838.21	209,050.40

[1] Includes judgments of Court of Claims and increase of compensation.

NOTE.—Cash on hand with United States Treasurer and special fiscal agents on projects, $4,302,884.53.

The purpose of the foregoing is merely to set forth the fact that the expenditures and liabilities have not exceeded the authorizations. The balance of authorizations over expenditures and liabilities amounting to $14,413,315.97 is due to the fact that the accretions to the reclamation fund were much less during the year than the estimate upon which the authorizations were based. The available cash balance with the United States Treasurer and special fiscal agents on June 30, was $4,302,884.53, which is $3,254,175.74 in excess of current and deferred liabilities, not including the $18,000,000 unpaid balance of the $20,000,000 advance from the General Treasury, which is known as the bond loan.

The following is a statement of available funds during the fiscal year 1922, not including the appropriations for Indian projects, showing also the expenditures and the balance on hand July 1, 1923:

Reclamation fund:		
Balance on hand July 1, 1921	$4,065,873.30	
Less: Adjustment	238,497.27	$3,827,376.03
Proceeds from sale of public lands		1,775,500.80
Proceeds from sale of town lots		18,645.08
Oil leasing royalties		3,426,633.84
Potassium leasing royalties		165.88
Proceeds from Federal power leases		106.31
Project collections		4,294,557.34
Total reclamation fund		13,342,935.28
Special:		
Judgments, Court of Claims		100,228.93
Increase of compensation (net)		327,572.56
Grand total		13,770,736.77
Expenditures:		
Repayment bond loan	$1,000,000.00	
Reclamation fund	8,040,050.75	
Judgments, Court of Claims	100,228.93	
Increase of compensation (net)	327,572.56	9,467,852.24
Balance on hand July 1, 1922, reclamation fund		4,302,884.53
Yuma auxiliary:		
Balance on hand July 1, 1921	$265,842.56	
Proceeds from sale of lands	18,691.55	
Project collections	133,199.13	
Total, auxiliary fund		417,733.24
Increase of compensation (net)		3,319.82
Total		421,053.06
Expenditures:		
Auxiliary fund	$288,940.84	
Increase of compensation	3,319.82	292,260.66
Balance on hand July 1, 1922		128,792.40
Drainage and cutover:		
Balance on hand July 1, 1921	$205.93	
Deficiency appropriation	21.01	226.94
Expenditures		21.01
Balance on hand July 1, 1922 (to lapse)		205.93

Proceeds from the sale of public lands and town sites, by States.

	Sales of public lands.		Sale of reclamation townsites.		Totals.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Arizona	$96,417.68	$1,997,714.22			$96,417.68	$1,997,714.22
California	156,238.21	7,123,840.13			156,238.21	7,123,840.13
Colorado	227,234.51	9,430,339.89			227,234.51	9,430,339.89
Idaho	112,615.38	6,558,535.82	$1,303.66	$175,766.69	113,919.04	6,734,302.51
Kansas	[1]1,064.66	1,034,186.63			[1]1,064.66	1,034,186.63
Montana	293,884.12	14,471,113.46	1,294.77	119,789.93	295,178.89	14,590,903.39
Nebraska	7,886.19	2,076,321.65			7,886.19	2,076,321.65
Nevada	33,383.59	863,682.01			33,383.59	863,682.01
New Mexico	168,016.06	5,517,342.49			168,016.06	5,517,342.49
North Dakota	510.81	12,211,646.52			510.81	12,211,646.52
Oklahoma	2,457.59	5,927,198.13			2,457.59	5,927,198.13
Oregon	96,242.52	11,540,682.94			96,242.52	11,540,682.94
South Dakota	39,737.99	7,656,527.88	142.05	74,330.22	39,880.04	7,730,858.10
Utah	167,523.94	3,396,917.36			167,523.94	3,396,917.36
Washington	30,551.46	7,233,577.30			30,551.46	7,233,577.30
Wyoming	343,865.41	7,280,623.13	17,266.08	198,476.80	361,131.49	7,479,099.93
Adjustment			[1]1,361.48		[1]1,361.48	
Total	1,775,500.80	104,320,249.56	18,645.08	568,363.64	1,794,145.88	104,888,613.20

[1] Contra.

ASSETS, LIABILITIES, AND CAPITAL.

The financial statement following this narrative includes what are for convenience termed "Reclamation fund projects," or those projects which are being constructed primarily from the reclamation fund. The Riverton (formerly called Wind River) project is classed with the above as it is now subject to the reclamation act. The statement excludes the Mesa division of the Yuma project, the expenditures in connection with the drainage and cut-over investigations and the Indian projects being constructed for the office of Indian Affairs.

The funds that have been made available for the construction of reclamation fund projects to date are as follows:

Reclamation fund proper		$112,707,411.56
Judgments, Court of Claims		550,347.58
Increase of compensation (net)		2,191,084.95
Rio Grande Dam		1,000,000.00
Ceded lands, Wind River (Riverton)	$359,432.41	
Increase of compensation	17,761.73	
		377,194.14
Total capital		116,826,038.23
Advance to reclamation fund (bond loan), not reimbursed		18,000,000.00
Total		134,826,038.23
Less cash on hand, including Wind River for $1,225.87		4,304,110.40
		130,521,927.83
Plus: Reexpenditure of capital (collections)		41,351,434.94
Gross expenditure		171,873,362.77

Capital, nonreimbursable.—The appropriation of $1,000,000 for the Rio Grande Dam is not reimbursable, but is included in the construction cost of the Rio Grande project and then subtracted so as to reduce the asset—construction cost of project—to a reimbursable basis. Likewise it is subtracted from the capital account as a nonreimbursable capital investment.

Capital, temporary impairment.—The reclamation act and acts amendatory thereof or supplementary thereto contemplate the repayment of only the actual cost. Such a limitation inevitably results in more or less expenditures which may in the end not be reimbursed. Such, for example, are expenditures in connection with secondary project investigations and projects which have been completed or partly completed and then discontinued. Some expenditures of this character have been made and are here treated as temporary impairment of the capital, although it is not altogether improbable that changing conditions incident to the development of the work of reclaiming lands will provide a means of reimbursement. This is especially true of secondary project investigations, as the United States will be reimbursed in the event of the adoption and construction of irrigation projects for which the investigations were made.

The expenditures in connection with discontinued projects and in one or two cases where, by contracts, the water users have been relieved of the responsibility of repaying certain items are included in the construction cost asset and then subtracted to arrive at the probable reimbursable value.

There is also an item of operation and maintenance cost carried as an impairment of the capital, due to the discontinuance of one division of a project and no provision made in a contract with the water users for repayment of a portion of the cost in connection with another division.

The temporary impairment, exclusive of secondary project investigations, amounts to $1,933,706 or about 1.4 per cent of the funds made available for reclamation fund projects. The amount invested in secondary project investigations will be reimbursed in the event of the adoption and construction of irrigation projects.

Reserves include the revenues on account of leases of grazing lands, penalties, and forfeitures in connection with construction repayment accounts, etc., which are not considered creditable to the projects, and are therefore in the consolidated financial statement set over against the capital impairment.

Liabilities include some contingent items, current obligations, and the unpaid balance of the loan of $20,000,000 to the reclamation fund by the General Treasury, which is being repaid at the rate of $1,000,000 per annum, $2,000,000 having been returned at the close of the fiscal year.

Assets include the unexpended balance of the reclamation fund, value of materials, supplies, equipment, and plant on hand, current and deferred accounts receivable, prepaid value of civil service retirement fund transfers, the cost value of irrigation works, etc. The latter is reduced by the cost of discontinued projects, the nonreimbursable value of the Rio Grande project as previously explained, and by the value of water right contracts. These contracts change the form of the asset, first to a deferred accounts receivable, then to a current account, and lastly to cash when paid.

The receivable accounts include, in addition to the current and deferred portions of the water-right construction contracts, the unpaid portion of the cost of operation and maintenance. Part of the operation and maintenance cost is covered by current bills; some is deferred under contracts; a portion represents deficits during previous years; and the balance is current year cost. The deficits are gradually being absorbed by increased assessments, and the current year cost will be billed at the close of the season in accordance with public notices.

Statement of assets, liabilities, and capital, reclamation fund projects, as of June 30, 1922.

	Balances.	Subtotals.	Totals.
Assets:			
Cash—			
With Treasurer United States, reclamation fund	$3,699,225.20		
With Treasurer United States, unadjusted	11.62		
With special fiscal agents, reclamation fund	603,647.71		
		$4,302,884.53	
With Treasurer United States, ceded lands, Wind River (Riverton)	1,067.87		
With Treasurer, United States, unadjusted, Wind River (Riverton)	158.00		
		1,225.87	
With project employees, including special deposits	27,362.33	27,362.33	
			$4,331,472.73
Inventories, lumber, steel, cement, forage, fuel, etc.	989,807.50		989,807.50
Plant and equipment, original value less depreciation	2,798,453.59		2,798,453.59
Prepaid civil-service retirement fund	1,148.62		1,148.62
Accounts receivable (current)—			
Uncollected construction water-right charges accrued	2,161,517.22	2,161,517.22	
Uncollected operation and maintenance charges accrued	2,033,052.26	2,033,052.26	
Uncollected rentals of irrigating water	229,959.10	229,959.10	
Uncollected rentals of power and light	33,121.54	33,121.54	
Uncollected rentals of grazing and farming lands	21,725.61	21,725.61	
Uncollected miscellaneous	151,940.42	151,940.42	
			4,631,316.15

Statement of assets, liabilities, and capital, reclamation fund projects, as of June 30, 1922—Continued.

	Balances.	Subtotals.	Totals.
Assets—Continued.			
Accounts receivable (deferred)—			
Construction water-right contracts—unaccrued charges	$82,369,311.14		
Construction water-right charges paid in advance (contra)	163,525.63		
		$82,205,785.51	
Operation and maintenance charges unaccrued—			
Contracted (specific contracts)	329,417.78		
Charges paid in advance (contra)	2,580.66		
		326,837.12	
Not contracted (including net cost Jan. 1 to June 30, 1922)	1,972,266.30		
Less: Loss	249,816.59		
		1,722,449.71	
Miscellaneous (to be paid from Yuma Auxiliary fund)		252,000.00	
			$84,507,072.34
Undistributed cost of general offices (to be transferred to project costs)	76,841.87		76,841.87
Irrigation works—			
Gross construction cost	138,969,484.63		
Less: Miscellaneous revenues	3,906,502.75		
		135,062,981.88	
Less—			
Discontinued projects, etc	1,435,073.20		
Nonreimbursable	1,000,000.00		
Contracted returns	97,710,074.32		
		100,145,147.34	34,917,834.54
Investment items in transit	10,493.13		10,493.13
Total assets			132,264,440.47
Liabilities:			
Current accounts payable; labor, purchases, transportation, etc	601,665.25		
Contingent; uncompleted construction contracts, undelivered purchase orders, special cash deposits, etc	447,043.54		
		1,048,708.79	
Less: Contingent asset value of uncompleted contracts, undelivered purchases, etc	419,788.82	419,788.82	628,919.97
Deferred; Treasury loan to reclamation fund—			
Amount loaned	20,000,000.00		
Less: Amount repaid	2,000,000.00		
		18,000,000.00	18,000,000.00
Capital:			
Reclamation fund—			
Sale of public lands	104,320,249.56		
Sale of town-site lots	568,363.64		
Proceeds from potassium royalties and rentals	14,220.18		
Proceeds from oil-leasing act—			
Past production	4,171,479.18		
Current production	3,632,992.69		
Proceeds, Federal water-power licenses	106.31		
		112,707,411.56	
Special funds:			
Judgments, Court of Claims	550,347.58	550,347.58	
Rio Grande Dam	1,000,000.00	1,000,000.00	
Increase of compensation (includes Riverton-Indian)	2,208,846.68	2,208,846.68	
Ceded lands, Wind River (Riverton)	359,432.41	359,432.41	
Total capital fund		116,826,038.23	
Less—			
Temporary impairment of capital—			
Secondary project investigations	1,748,479.16		
Less: Funds advanced	406,135.62		
	1,342,343.54		
Discontinued projects, etc., construction	1,435,073.02		
Operation and maintenance	249,816.59		
	3,027,233.15		
Less: Reserves; rentals of lands, forfeitures, etc	836,715.42		
	2,190,517.73		
Nonreimbursable, Rio Grande Dam	1,000,000.00	3,190,517.73	113,635,527.50
Total liabilities and unimpaired capital			132,264,440.47

CONSTRUCTION COSTS.

The following statement summarizes, by projects, the net construction cost, that portion which probably will not be repaid on account of discontinued projects, etc., that which is nonreimbursable, the amounts covered by repayment contracts, and the balance which it is expected will ultimately be contracted as projects or parts of projects are completed and construction charges announced.

By net cost is meant the gross cost, less incidental revenues such as rentals of buildings, etc. These revenues are distinguished from "contracted returns" in that the latter are in the nature of permanent water rights.

Contracted returns include individual water-right applications, agreements with water users' organizations, etc., and the amounts advanced for construction purposes by beneficiaries prior to execution of the work. These contracted returns are made a matter of bookkeeping record only when there is a definite basis of entry as to the amount to be returned. Much of the security for the return of the net cost is of such a nature that it can not be reflected in the books. This security consists of large areas of irrigable land, most of which is to a greater or less extent obligated ultimately to repay its proportionate share of the cost. It includes public land withdrawn unentered, public land entered subject to the reclamation act, private land pledged in some manner to repay its proportionate share of the cost, private land not pledged, State land sold or unsold, railroad land, etc. Regardless of the status of these various classes of land, they are arid or semiarid and require water for their full development. Thus, there is a large resource for the repayment of the cost which can not at present be reduced to dollars and cents and be shown in a financial statement.

Most of the contracts for the return of the cost of a particular project or division of a project are not executed until the major portion of the work is completed. In some instances, however, notably the King Hill project, the repayment contract precedes the construction cost; hence the excess of contracted returns over net cost to date.

The period of return usually extends over 20 years in accordance with the extension act (Aug. 13, 1914, 38 Stat., 686). There are numerous exceptions to this rule, and the period of repayment may now be running or it may not begin until some future date.

Consolidated statement, by projects, of net construction cost and contracted returns.

State and project.	Net cost.		Discontinued projects, etc.	Nonreimbursable.	Contracted returns.		Balance.	
	Fiscal year 1922.	To June 30, 1922.			Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Arizona:								
Salt River		$10,548,119.28	[1] $382,014.17		$83.14	$10,166,105.11	*$83.14	
Arizona-California:								
Yuma	*$196,541.59	8,942,183.14			*162,565.60	5,712,469.42	*33,975.99	$3,229,713.72
California:								
Orland	42,025.78	1,057,959.13			2,668.16	1,064,153.48	39,357.62	*6,194.35
Colorado:								
Grand Valley	34,017.28	3,765,198.61				156.63	34,017.28	3,765,041.98
Uncompahgre	32,443.97	6,667,183.45	[2] 47,370.81		6,713,584.50	6,713,584.50	*6,681,140.53	*93,771.86
Idaho:								
Boise	21,378.12	12,425,780.97			280,112.81	12,336,790.50	*258,734.69	99,100.47
King Hill	261,178.80	1,471,624.46				2,000,000.00	261,178.80	*528,375.54
Minidoka	63,331.29	6,846,239.87			*965.25	6,916,017.86	64,296.54	*69,777.99
Kansas:								
Garden City		385,651.07	[3] 332,521.77		54.89	53,129.30	*54.89	
Montana:								
Huntley	18,248.41	1,467,685.13			*8,208.30	1,324,998.08	26,456.71	142,687.05
Lower Yellowstone	694,425.17	3,566,405.65				3,614,104.21	694,425.17	*47,698.56
Milk River	308,291.15	6,559,896.31					308,291.15	6,559,896.31
Sun River	103,490.41	4,037,839.78			2,712.00	427,697.84	100,778.41	3,610,141.94
Nebraska-Wyoming:								
North Platte	1,294,760.21	12,962,329.94			1,822,980.77	8,849,806.65	*528,220.56	4,112,523.29
Nevada:								
Newlands	191,848.04	6,691,414.52			669,642.48	2,692,614.01	*477,794.44	3,998,800.51
New Mexico:								
Carlsbad	*1,507.33	1,397,303.65				1,417,481.06	*1,507.33	*20,177.41
Hondo		371,867.17	[3] 371,867.17					
New Mexico-Texas:								
Rio Grande	794,053.27	11,315,348.98		[4] $1,000,000.00	5,000.00	7,655,000.00	789,053.27	2,660,348.98
North Dakota:								
North Dakota pumping	*629.88	684,796.83	[3] 301,299.10			290,803.74	*629.88	92,693.99
Oregon:								
Umatilla	221,223.79	2,798,885.14			1,012,208.02	2,687,104.49	*790,984.23	111,780.65
Oregon-California:								
Klamath	403,468.58	3,540,333.84			48,372.15	2,097,236.94	355,096.43	1,443,096.90

* Contra.

[1] See contract with water users' association dated Sept. 6, 1917.

[2] See contract with water users' association dated May 7, 1918.

[3] Projects partly or wholly discontinued.

[4] Expenditures in connection with the construction of Elephant Butte Dam, Rio Grande project, not reimbursable by water users (34 Stat., 1357).

Consolidated statement, by projects, of net construction cost and contracted returns—Continued.

State and project.	Net cost.		Discontinued projects, etc.	Nonreimbursable.	Contracted returns.		Balance.	
	Fiscal year 1922.	To June 30, 1922.			Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
South Dakota:								
Belle Fourche	$85,628.36	$3,568,689.69			$1,215.06	$2,617,847.09	$84,413.30	$950,842.60
Utah:								
Strawberry Valley	*8,365.16	3,472,461.80			7,170.00	3,082,999.37	*15,535.16	389,462.43
Washington:								
Okanogan	162,558.48	1,398,057.67			200,000.00	1,503,003.29	*37,441.52	*104,945.62
Yakima	649,249.00	11,005,460.84			58,435.89	9,596,966.69	590,813.11	1,408,494.15
Wyoming:								
Riverton	308,934.69	634,407.64					308,934.69	634,407.64
Shoshone	763,693.68	7,479,857.32			313,630.24	4,900,204.06	450,063.44	2,579,653.26
Total	6,247,204.52	135,062,981.88	$1,435,073.02	$1,000,000.00	10,966,130.96	97,710,074.32	*4,718,926.44	34,917,834.54

* Contra.

OPERATION AND MAINTENANCE COSTS.

The following statement summarizes, by projects, the net cost, the contracted returns, and the balance not contracted for the calendar year 1921 and the total to December 31, 1921.

Similar to the construction statement the net cost represents the gross cost less incidental revenues, or those returns which are not for water deliveries.

The contracted returns include all definite contracts for the return of the net cost, regardless of the terms of payment. Some has been billed and paid, some is represented by unpaid bills, and some is covered by contracts providing for payment at some future date.

The "balance" is that part of the cost which is not at present covered by bills or definite repayment contracts. The items starred indicate contracted returns in excess of net cost. The balance is carried to the consolidated balance sheet as a part of the unaccrued operation and maintenance accounts receivable.

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Consolidated statement, by projects, of net operation and maintenance cost and contracted returns, by calendar years.

State and project.	Net cost.		Loss.	Contracted returns.		Balance.	
	Calendar year 1921.	To Dec. 31, 1921.		Calendar year 1921.	To Dec. 31, 1921.	Calendar year 1921.	To Dec. 31, 1921.
Arizona-California:							
Yuma	$330,742.08	$1,276,629.68		$260,627.18	$882,163.30	$70,114.90	$394,466.38
California:							
Orland	37,596.48	165,191.22		39,491.05	164,673.17	*1,894.57	518.05
Idaho:							
Boise	327,437.27	1,180,464.68		326,712.64	1,180,428.29	724.63	36.39
Minidoka	144,893.25	1,206,570.34		150,748.21	1,232,860.31	*5,854.96	*26,289.97
Montana:							
Huntley	58,299.43	789,976.64		67,222.88	377,152.99	*8,923.45	412,823.65
Sun River	17,510.77	177,667.60		26,516.64	148,326.85	*9,005.87	29,340.75
Montana-North Dakota:							
Lower Yellowstone	*467,914.14	291,955.27		32,414.39	293,521.09	*500,328.53	*1,565.82
Nebraska-Wyoming:							
North Platte	262,096.95	1,430,661.96		178,020.88	1,559,898.20	84,076.07	*129,236.24
Nevada:							
Newlands	106,501.12	856,625.54		121,022.47	682,709.00	*14,521.35	173,916.54
New Mexico:							
Carlsbad	45,452.10	405,103.30		58,291.14	396,769.43	*12,839.04	8,333.87
New Mexico-Texas:							
Rio Grande	233,754.42	233,754.42		230,019.98	230,019.98	3,734.44	3,734.44
North Dakota:							
North Dakota pumping	32,137.46	395,573.02	[1] $249,816.59	32,137.46	145,756.43		
Oregon:							
Umatilla	43,709.78	290,782.91		52,205.39	298,318.77	*8,495.61	*7,535.86
Oregon-California:							
Klamath	65,380.20	502,722.91		73,674.28	512,743.51	*8,294.08	*10,020.60
South Dakota:							
Belle Fourche	129,322.92	866,792.03		147,073.96	774,433.89	*17,751.04	92,358.14
Utah:							
Strawberry Valley	134,369.69	301,575.14		61,814.15	210,194.02	72,555.54	91,381.12
Washington:							
Okanogan	60,389.63	305,506.28		47,559.94	206,954.99	12,829.69	98,551.29
Yakima	223,765.88	1,873,320.40		298,168.64	1,883,138.47	*74,402.76	*9,818.07
Wyoming:							
Shoshone	81,869.29	527,926.30		120,488.33	532,974.81	*38,619.04	*5,048.51
Total	1,867,314.58	13,078,799.64	249,816.59	2,324,209.61	11,713,037.50	*456,895.03	1,115,945.55

* Contra.
[1] Includes deficit on Buford-Trenton division and on Williston division prior to Apr. 1, 1919.

REPAYMENTS AND MISCELLANEOUS RETURNS.

During the fiscal year 1922 there was returned to the reclamation fund by the water users and others a total of $4,294,507.34, making a turnover to date of $41,350,449.48, including $2,997,829.24 returned by the Office of Indian Affairs on account of previous expenditures from reclamation fund in connection with Indian projects.

These returns are classified as repayment of net construction cost; repayment of net operation and maintenance cost; and miscellaneous. Miscellaneous includes the collections on account of temporary rentals of various kinds, sales of materials, supplies, meals, mercantile stock, etc.

The following is a summarization of the collections for the year and to date, creditable to the reclamation fund:

	Fiscal year 1922.	To June 30, 1922.
Repayments, net construction cost	$1,410,364.87	$12,933,434.47
Repayments, net operation and maintenance cost	1,641,428.56	9,456,875.43
Miscellaneous:		
Water rentals	380,760.99	6,899,487.42
Power and light	239,615.26	2,250,715.86
Reimbursement from Indian officer, Indian projects		2,997,829.24
Other miscellaneous	622,337.66	6,812,107.06
Total	4,294,507.34	41,350,449.48

The outstanding current accounts receivable as of June 30, 1922, total $4,631,316.15, summarized as follows:

Construction repayments	$2,161,517.22
Operation and maintenance repayments	2,033,052.26
Water rentals	229,959.10
Power and light	33,121.54
Grazing and farming lands	21,725.61
Miscellaneous	151,940.42
Total	4,631,316.15

The following statements give the status of the accrued charges in connection with construction and operation and maintenance repayments, and water rentals; also the balance of uncollected charges for power and light, grazing and farming lands, and miscellaneous:

Construction repayments (including funds advanced for construction).

State and project.	Due.		Collected.		Other credits to June 30, 1922.	Uncollected June 30, 1922.
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
Arizona:						
Salt River	$406,724.02	$1,220,005.78	$838.95	$610,800.27	.....	$609,205.51
Arizona-California:						
Yuma	141,350.62	986,766.96	110,860.94	926,883.52	$951.26	58,932.18
California:						
Orland	44,735.79	169,284.65	44,735.79	169,284.65	.....	.....
Colorado:						
Grand Valley	.....	156.63	.....	156.63	.....	.....
Uncompahgre	933.80	933.80	933.80	933.80	.....	.....
Idaho:						
Boise	379,026.78	1,307,579.18	215,272.42	1,086,746.04	25,092.00	195,741.14
King Hill	76,752.20	76,752.20	.....	.....	.....	76,752.20
Minidoka	271,881.91	2,570,581.91	218,128.01	2,231,118.38	153,706.69	185,756.84
Kansas:						
Garden City	839.89	53,129.30	504.89	[1] 52,794.30	.....	335.00
Montana:						
Huntley	26,000.11	367,118.43	13,937.96	345,307.45	339.40	21,471.58
Sun River	11,746.44	148,793.34	5,942.24	135,863.49	.....	12,929.85
Montana-North Dakota:						
Lower Yellowstone	.....	41,135.10	.....	41,135.10	.....	.....
Nebraska-Wyoming:						
North Platte	358,851.72	1,981,683.42	192,347.60	1,534,240.66	33,816.79	413,625.97
Nevada:						
Newlands	40,181.40	506,570.37	31,162.50	482,654.41	5,447.40	18,468.56
New Mexico:						
Carlsbad	55,428.29	372,368.87	49,562.71	330,490.14	.....	41,878.73
New Mexico-Texas:						
Rio Grande	5,000.00	5,000.00	.....	.....	.....	5,000.00
Oregon:						
Umatilla	29,225.00	341,490.34	8,101.94	305,015.47	.....	36,474.87
Oregon-California:						
Klamath	27,737.23	502,285.70	41,613.58	475,896.73	.....	26,388.97
South Dakota:						
Belle Fourche	110,686.19	631,207.56	26,000.00	462,924.77	11.08	168,271.71
Utah:						
Strawberry Valley	93,099.76	355,824.97	63,484.23	313,689.35	.....	42,135.62
Washington:						
Okanogan	9,327.15	50,711.18	6,636.15	41,126.87	.....	9,584.31
Yakima	366,626.44	2,965,538.35	339,719.04	2,803,047.79	26,446.87	136,043.69
Wyoming:						
Shoshone	99,355.83	685,845.14	40,582.12	583,324.65	.....	102,520.49
Total	2,555,510.57	15,340,763.18	1,410,364.87	12,933,434.47	245,811.49	2,161,517.22

[1] From sale of land and plant.

NOTE: Uncollected balance June 30, 1922, 14.1 per cent of total accruals to date.

Operation and maintenance repayments.

[Public notice.]

State and project.	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to date.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
Arizona-California:						
Yuma	$261,073.72	$896,377.24	$167,033.45	$685,705.95	$12,539.23	$198,132.06
California:						
Orland	41,544.67	173,237.51	39,375.19	164,562.96	8,564.34	110.21
Idaho:						
Boise	355,691.32	1,231,251.93	267,123.86	996,187.02	36,717.73	198,347.18
Boise (drainage)	154,364.94	201,014.21	48,143.95	67,811.39	2,051.05	131,151.77
Minidoka	156,317.12	1,231,856.66	181,146.04	1,016,470.14	66,671.75	148,714.77
Montana:						
Huntley	68,523.18	382,275.49	24,394.11	285,970.82	6,689.35	89,615.32
Sun River	26,717.77	150,939.67	8,559.86	116,140.32	2,679.07	32,120.28
Montana-North Dakota:						
Lower Yellowstone		144,173.15	8,542.42	45,337.42	4.63	98,831.10
Nebraska-Wyoming:						
North Platte	207,697.92	1,608,404.04	91,474.26	1,232,806.84	39,352.52	336,244.68
Nevada:						
Newlands	123,297.84	694,670.32	88,671.50	598,502.01	19,577.48	76,590.83
New Mexico:						
Carlsbad	59,714.73	402,204.85	38,518.52	331,598.13	5,086.81	65,519.91
New Mexico-Texas:						
Rio Grande	217,833.61	217,982.63	143,728.11	213,496.19	4,486.44	
North Dakota:						
North Dakota Pumping	12,766.31	49,627.37	6,894.44	28,913.92		20,713.45
Oregon:						
Umatilla	27,391.15	257,855.67	25,258.55	221,099.28	3,277.56	33,478.83
Oregon-California:						
Klamath	28,250.34	431,711.09	56,935.46	363,621.50	30,014.15	38,075.44
South Dakota:						
Belle Fourche	150,036.78	786,440.46	37,895.38	510,342.75	11,972.78	264,124.93
Utah:						
Strawberry Valley	70,802.56	224,871.74	51,708.12	193,049.68	6,938.69	24,883.37
Washington:						
Okanogan	52,649.62	190,130.96	49,429.80	170,402.06	3,083.56	16,645.34
Yakima	285,303.77	1,967,959.74	260,571.87	1,827,865.65	25,660.27	114,433.82
Wyoming:						
Shoshone	122,456.36	541,666.43	46,023.67	386,991.40	9,356.06	145,318.97
Total	2,422,533.71	11,784,651.16	1,641,428.56	9,456,875.43	294,723.47	2,033,052.26

NOTE.—Uncollected balance June 30, 1922, 17.2 per cent of total accruals to date.

Operation and maintenance revenues.

[Water rentals prior to public notice.]

State and project.	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
Arizona:						
Salt River		$2,246,726.01		$2,246,726.01		
Arizona-California:						
Yuma	$11,799.67	462,761.51	$12,803.39	460,419.68	$101.55	$2,240.28
California:						
Orland	229.50	120,154.50	229.50	120,154.50		
Colorado:						
Grand Valley	58,890.58	168,828.36	40,050.27	139,774.49	1,137.29	27,916.58
Uncompahgre	131,617.52	1,172,244.13	133,034.79	1,083,222.22		89,021.91
Idaho:						
Boise	15,160.33	721,247.21	11,193.17	705,410.71	4,720.50	11,116.00
King Hill	19,692.71	23,504.49	19,578.79	23,390.57		113.92
Minidoka	5,721.80	267,887.04	5,721.80	264,652.81	3,234.23	
Montana:						
Huntley	431.99	5,159.27	343.81	5,071.09		88.18
Milk River	15,372.67	156,469.19	23,746.65	133,539.63	14.40	22,915.16
Sun River	22,102.45	34,887.86	5,861.44	12,665.30	140.75	22,081.81
Montana-North Dakota:						
Lower Yellowstone	112.16	122,023.08	669.11	119,468.25		2,554.83
Nebraska-Wyoming:						
North Platte	51,684.52	159,957.73	56,276.05	158,464.49	2.00	1,491.24
Nevada:						
Newlands	1,885.10	15,653.27	1,800.35	15,568.52		84.75
New Mexico:						
Carlsbad	1,473.70	18,858.44	1,473.70	18,858.44		
Hondo		9,165.19		9,129.70		35.49
New Mexico-Texas:						
Rio Grande	1,575.00	1,090,101.25	57,432.31	1,043,848.57		46,252.68
North Dakota:						
North Dakota Pumping		2,149.03		2,149.03		
Oregon:						
Umatilla	2,674.05	30,786.09	1,125.89	29,810.05	609.42	366.62
Oregon-California:						
Klamath	1,241.14	42,189.62	734.30	41,665.96		523.66
South Dakota:						
Belle Fourche	793.16	4,651.38	793.16	4,501.38		150.00
Utah:						
Strawberry Valley		8,388.39		8,388.39		
Washington:						
Okanogan	457.25	109,976.27	410.40	105,860.29	2,319.09	1,796.89
Yakima	5,118.89	136,437.67	5,877.31	135,696.75		740.92
Wyoming:						
Shoshone	1,672.36	11,518.77	1,604.80	11,050.59		468.18
Total	349,706.55	7,141,725.75	380,760.99	6,899,487.42	12,279.23	229,959.10

Statement of uncollected balances (not including construction and operation and maintenance repayments and water rentals) as of June 30, 1922.

State and project.	Power and light.	Grazing and farming lands.	Miscellaneous.	Total.
Arizona-California:				
Yuma		$663.72	$5,065.94	$5,729.66
California:				
Orland			4.60	4.60
Colorado:				
Grand Valley		62.00	79.82	141.82
Uncompahgre			201.76	201.76
Idaho:				
Boise		110.63	6,554.53	6,665.16
King Hill			483.86	483.86
Minidoka	$23,751.83	5,240.42	1,757.43	30,749.68
Montana:				
Huntley		964.42	73.00	1,037.42
Milk River		694.82	4,766.43	5,461.25
Sun River		4,761.55	416.36	5,177.91
Montana-North Dakota:				
Lower Yellowstone		33.00	901.34	934.34
Nebraska-Wyoming:				
North Platte	2,211.06	4,965.13	58,360.49	65,536.68
Nevada:				
Newlands	1,462.84	38.40	1,068.13	2,569.37
New Mexico:				
Carlsbad		294.34	152.94	447.28
New Mexico-Texas:				
Rio Grande		8.00	2,789.64	2,797.64
North Dakota:				
North Dakota Pumping	3,758.50		27.61	3,786.11
Oregon:				
Umatilla			871.53	871.53
Oregon-California:				
Klamath		2,696.72	2,423.02	5,119.74
South Dakota:				
Belle Fourche			192.90	192.90
Utah:				
Strawberry Valley	1,618.71		467.30	2,086.01
Washington:				
Okanogan			1,507.35	1,507.35
Yakima		233.30	1,019.77	1,253.07
Wyoming:				
Riverton			523.13	523.13
Shoshone	318.60	305.25	1,717.25	2,341.10
Secondary projects		653.91	33,958.50	34,612.41
Washington office			2,443.98	2,443.98
Denver office			24,111.81	24,111.81
Total	33,121.54	21,725.61	[1] 151,940.42	206,787.57

[1] Includes unadjusted transfers between projects.

NET INVESTMENT.

The total set aside by the United States for reclamation purposes, as shown by the statement of assets, liabilities, and capital, including the unpaid balance of the bond loan, amounts to $134,826,038.23. Of this there is on hand $4,302,884.53 in the reclamation fund and $1,225.87 in the Wind River Indian fund, the difference amounting to $130,521,927.83 being invested. The net investment by projects is set forth in the following statement:

Voucher transactions and net investment as of June 30, 1922, reclamation fund projects, including Wind River (Riverton).

	Expenditures.[1]		Collections.		Net investment.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Arizona:						
Salt River	.....	$14,671,484.24	$838.95	$4,734,165.23	*$838.95	$9,937,319.01
Arizona-California:						
Yuma	$414,965.52	11,642,765.63	323,229.65	2,528,201.10	91,735.87	9,114,564.53
California:						
Orland	74,300.12	1,397,851.52	88,433.80	493,527.77	*14,133.68	904,323.75
Colorado:						
Grand Valley	94,335.01	4,121,204.39	47,886.63	257,043.86	46,448.38	3,864,160.53
Uncompahgre	160,882.69	7,991,315.55	136,789.79	1,308,116.33	24,092.90	6,683,199.22
Idaho:						
Boise	338,150.01	15,225,178.05	575,450.83	3,550,523.25	*237,300.82	11,674,654.80
King Hill	271,325.77	1,615,039.71	29,556.98	67,760.55	241,768.79	1,547,279.16
Minidoka	392,963.28	8,990,876.24	570,572.39	4,340,730.94	*177,609.11	4,650,145.30
Kansas:						
Garden City	.....	390,495.54	504.89	57,638.77	*504.89	332,856.77
Montana:						
Huntley	45,427.03	2,381,139.84	42,138.35	707,770.58	3,288.68	1,673,369.26
Milk River	275,034.75	4,115,319.83	34,268.06	202,700.51	240,766.69	3,912,619.32
St. Mary Storage	34,035.71	2,878,453.93	10,971.43	109,071.72	23,064.28	2,769,382.21
Sun River	126,078.59	4,399,569.51	26,793.21	402,418.37	99,285.38	3,997,151.14
Montana-North Dakota:						
Lower Yellowstone	196,859.50	3,925,606.31	12,287.69	279,052.71	184,571.81	3,646,553.60
Nebraska-Wyoming:						
North Platte	1,149,684.19	15,335,420.61	416,275.67	3,322,073.03	733,408.52	12,013,347.58
Nevada:						
Newlands	490,844.19	8,119,057.91	153,419.80	1,439,828.71	337,424.39	6,679,229.20
New Mexico:						
Carlsbad	53,709.32	1,917,038.21	98,158.94	746,006.38	*44,449.62	1,171,031.83
Hondo	.....	406,744.36	.....	34,841.70	.....	371,902.66
New Mexico-Texas:						
Rio Grande	941,760.23	13,743,371.15	230,161.07	1,814,727.18	711,599.16	11,928,643.97
North Dakota:						
North Dakota Pumping	70,462.41	1,449,229.46	63,176.20	377,511.63	7,286.21	1,071,717.83
Oregon:						
Umatilla	142,255.00	3,290,933.16	40,910.60	733,570.24	101,344.40	2,557,362.92
Oregon-California:						
Klamath	424,071.75	4,376,997.10	128,806.83	1,086,417.97	295,264.92	3,290,579.13
South Dakota:						
Belle Fourche	195,737.49	4,568,788.81	69,160.06	1,040,983.62	126,577.43	3,527,805.19
Utah:						
Strawberry Valley	58,329.32	4,146,316.72	152,652.48	950,098.14	*94,323.16	3,196,218.58
Washington:						
Okanogan	115,569.06	1,761,463.36	60,490.92	341,386.64	55,078.14	1,420,076.72
Yakima	932,440.71	14,259,059.27	655,985.21	5,361,542.74	276,455.50	8,897,516.53
Wyoming:						
Riverton [a]	306,867.75	855,191.44	2,070.05	20,029.18	304,797.70	835,162.26
Shoshone	880,474.90	8,622,907.93	98,826.73	1,191,754.26	781,648.17	7,431,153.67
Secondary (including Deschutes and Imperial Valley)	232,385.53	1,724,489.09	187,003.63	486,632.06	45,381.90	1,237,857.03
Denver office (net not transferred)	34,095.58	216,271.04	13,744.65	109,732.84	20,350.93	106,538.20
Washington office (net not transferred)	19,784.11	334,805.00	23,990.11	257,747.69	* 4,206.00	77,057.31
Indian projects (old accounts)[2]	.....	2,997,829.24	.....	2,997,829.24	.....	.....
Civil service retirement deductions, unabsorbed)	* 4,711.20	1,148.62	.....	.....	* 4,711.20	1,148.62
Total	8,468,118.32	171,873,362.77	4,294,555.60	41,351,434.94	4,173,562.72	130,521,927.83

* Contra.

[1] Expenditures reclamation fund: Disbursements plus transfers from other projects, less transfers to other projects.

[2] Expended for the Office of Indian Affairs from reclamation fund and later reimbursed by congressional appropriation.

Voucher transactions and net investment as of June 30, 1922, reclamation fund projects, including Wind River (Riverton)—Continued.

	Expenditures.		Collections.		Net investment.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Less: Riverton Indian Service investment [a]	$266.08	$376,953.73	$48.26	$985.46	$217.82	$375,968.27
Reclamation Service investment	8,467,852.24	171,496,409.04	4,294,507.34	41,350,449.48	4,173,344.90	130,145,959.56
Reclamation Service investment analyzed:						
Reclamation fund	8,040,050.75	167,754,976.51	4,294,507.34	41,350,449.48	3,745,543.41	126,404,527.03
Net increase compensation funds	327,572.56	2,191,084.95	.....	.....	327,572.56	2,191,084.95
Judgments, Court of Claims	100,228.93	550,347.58	.....	.....	100,228.93	550,347.58
Rio Grande dam appropriations	.....	1,000,000.00	.....	.....	.....	1,000,000.00
Total	8,467,852.24	171,496,409.04	4,294,507.34	41,350,449.48	4,173,344.90	130,145,959.56

NOTE.—Denver and Washington office investment represents under or over distributed expenditures, analyzed as follows:

	Denver Office.		Washington Office.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Reclamation fund disbursements	$270,399.15	$1,558,421.88	$221,779.71	$4,740,988.18
Net increase of compensation disbursements	16,870.54	67,107.96	16,624.58	69,089.21
Total disbursements	287,269.69	1,625,529.84	238,404.29	4,810,077.39
Less:				
Net transfers	253,174.11	1,409,258.80	218,620.18	4,475,272.39
Net expenditure	34,095.58	216,271.04	19,784.11	334,805.00
Reclamation fund collections	13,744.65	109,732.84	23,990.11	257,747.69
Net investment	20,350.93	106,538.20	*4,206.00	77,057.31

* Contra.

The investment as given in the foregoing statement is designated as for "reclamation fund projects" for the reason that the reclamation fund is the principal source from which expenditures are made in the construction of the projects named.

Other activities not included in "reclamation fund projects" are construction of mesa division of Yuma project; investigation of drainage and timber cut-over lands; construction of Indian projects.

The mesa division of the Yuma project or Yuma auxiliary is being constructed from funds advanced by purchasers of lands and water rights. No part of the reclamation fund is used in connection with this project. The expenditures are therefore less than the collections, resulting in a "contra" net investment which is in a sense a liability to the purchasers of lands and water rights.

The investigation of drainage and cut-over lands was made from an appropriation from the General Treasury.

The expenditures in connection with Indian projects are made from appropriations for the Office of Indian Affairs, the Reclamation Service acting as agent.

The following statement sets forth the net investment for the fiscal year and to date for each of these three activities:

	Expenditures.		Collections.		Net investment.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30. 1922.
Mesa division, Yuma project:						
Auxiliary fund	$288,940.84	$501,572.46	$133,199.13	$557,279.76	$155,741.71	*$55,707.30
Increase of compensation fund (net)	3,319.82	12,462.38			3,319.82	12,462.38
Total	292,260.66	514,034.84	133,199.13	557,279.76	159,061.53	*43,244.92
Drainage and cut-over fund	21.01	100,279.59		464.51	21.01	99,815.08
Increase of compensation fund (net)		728.94				728.94
Total	21.01	101,008.53		464.51	21.01	100,544.02
Indian projects (Montana):						
Blackfeet—						
Indian funds	35,712.36	1,198,097.31	16,035.42	38,952.24	19,676.94	1,159,145.07
Increase of compensation (net)	2,298.30	11,564.85			2,298.30	11,564.85
Judgments, Court of Claims		29.91				29.91
Total	38,010.66	1,209,692.07	16,035.42	38,952.24	21,975.24	1,170,739.83
Flathead—						
Indian funds	184,699.92	4,661,014.41	48,490.69	182,751.84	136,209.23	4,478,262.57
Increase of compensation fund (net)	9,899.23	136,702.95			9,899.23	136,702.95
Total	194,599.15	4,797,717.36	48,490.69	182,751.84	146,108.46	4,614,965.52
Fort Peck—						
Indian funds	32,850.14	890,221.62	13,725.81	23,717.12	19,124.33	866,504.50
Increase of compensation fund (net)	1,526.66	16,176.13			1,526.66	16,176.13
Judgments, Court of Claims		168.34				168.
Total	34,376.80	906,566.09	13,725.81	23,717.12	20,650.99	882,848.97

*Contra.

DISCUSSION OF PROJECTS.

PRIMARY PROJECTS.

ARIZONA, SALT RIVER PROJECT.

C. C. Cragin, Salt River Valley Water Users' Association, general superintendent and chief engineer, Phoenix, Ariz.

[The operation of the Salt River project was turned over to the water users on November 1, 1917. The Reclamation Service desires to express its appreciation of the cooperation of the Salt River Valley Water Users' Association in furnishing the following statement concerning the operations of the project during the fiscal year.]

The Salt River project is situated in Maricopa and Gila Counties, Ariz., and is populated by 76,100 people living on some 5,000 farms and in 14 towns. The water supply is the Salt and Verde Rivers augmented by wells located in various parts of the valley. Records show an average annual rainfall of 8.34 inches over a period of 35 years, and a range of temperature from 22° to 117° F. The soil is sandy loam and silt and the length of the irrigation season is 365 days, October 1 to September 30. The principal crops raised on the project are alfalfa, cotton, grain, citrus and deciduous fruits, and marketing points are Phoenix and other Arizona towns, Pacific coast cities, and the eastern market.

The Roosevelt Reservoir, created by the building of Roosevelt Dam at the confluence of the Tonto Creek and the Salt River, is 70 miles northeast of Phoenix. The stored water is carried down the Salt River to the Granite Reef Diversion Dam, which is situated approximately 4 miles below the mouth of the Verde River, where, together with such water as may be discharged from the Verde River, it is diverted to the north and south side canal systems. The water supply of the canals on the north side of the Salt River is further augmented by the water diverted at Joint Head Diversion Dam. There are now eight pumping plants in operation, with an approximate capacity of 9 second-feet each, and 79 pumping plants with capacities ranging from 1 to 4 second-feet. The present canal and lateral system comprises 863.35 miles, together with 111.50 miles of waste ditches, 1 mile of open drains, and 3.75 miles of closed drains. Power is generated at the Roosevelt power plant from the stored water. There are four other power plants at various locations on the project—the South Consolidated, Arizona Falls, Cross Cut, and Chandler. The power derived from these plants is used for pumping water for irrigation, drainage, and for commercial purposes.

SUMMARY OF DATA FOR SALT RIVER PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage of project on completion		213,000
Public land entered to June 30, 1922	16,170	
Private land, June 30, 1922	196,830	
Acreage irrigated, season of 1921		202,430
Acreage cropped under irrigation, season of 1921		191,000
Value of irrigated crops, season of 1921		$11,435,380
Value of irrigated crops per acre cropped		$59.87
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations		$1,000
Unencumbered balance July 1, 1922		$1,000
Fiscal year 1923, amount specified in appropriation act		$5,000

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost		$10,548,119.28
Less—		
Loss		382,014.17
Water-right contracts: Project lands		10,166,021.97
Penalties	$83.14	83.14
Total	83.14	10,548,119.28
Balance	*83.14	

* Contra.

Summary of data for Salt River project to end of fiscal year 1922—Continued.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$14,662,033.96	$9,450.28	$14,671,484.24
Less collections	4,734,165.23		4,734,165.23
Net investment	9,927,868.73	9,450.28	9,937,319.01

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected, cash.		Uncollected June 30, 1922.
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	
To return net construction cost:					
Water-right charges	$406,640.88	$1,219,922.64	$755.81	$610,717.13	$609,205.51
Penalties	83.14	83.14	83.14	83.14	
Total	406,724.02	1,220,005.78	838.95	610,800.27	609,205.51
Revenues:					
Rentals of irrigating water		2,246,726.01		2,246,726.01	
Rentals of power and light		998,411.03		998,411.03	
Rentals of grazing and farming lands		19,373.14		19,373.14	
Total		3,264,510.18		3,264,510.18	
Other miscellaneous collections				858,854.78	
Grand total collections			838.95	4,734,165.23	

ACTIVITIES DURING FISCAL YEAR.

An extensive waste-ditch program has been carried on during the year, the program calling for the disposition of the waste water at the low point of each quarter section within the project, and the construction, operation, and maintenance of approximately 375 miles of ditches.

Owing to the large paving program being carried on by Maricopa County, it has been necessary to put a special crew in the field to install undercrossings for present and future irrigation and waste ditches. This crew has installed 6,550 linear feet of concrete pipe and 5,498 linear feet of corrugated pipe. There were 54½ miles of waste ditches and 11 miles of irrigation ditches constructed during the year and 190 bridges installed for farm crossings. Twenty-five new pump houses were constructed.

The Monighan 2-yard walking type and the rebuilt Lidgerwood 1½-yard drag lines operated continuously on the widening of the Eastern Canal and excavated 203,000 cubic yards of caliche and bowlders.

Additional improvements were made to the Ruth excavator and this machine was very successfully operated berming the banks of the Eastern, east branch of the Consolidated, the Western, and the Grand Canals. Main canals were successfully demossed with heavy anchor chains drawn by 12 head of stock.

The P. & H. ½-yard excavator operated on the deepening of the Western Canal above the Highline pumping plant.

Operation data, Salt River project.

Item.	1920–21	1921–22
Acreage for which works were prepared to supply water	213,000	213,168
Acreage irrigated	205,060	203,346.50
Miles of canals operated	852.75	863.35
Water diverted (acre-feet)	[1] 1,371,983	1,231,031
Water delivered to land (acre-feet)	594,615	534,526.07
Acre-feet per acre for area under cultivation	2.90	[2] 2.635

[1] Includes 307,455 acre-feet wasted; water for Salt River Valley Water Users' system only; outside water deducted.

[2] Amount of water per acre actually charged for; 20 per cent less than the amount of water delivered to the land.

Settlement data, Salt River project.

Item.	1920	1921
Total number of farms on project (when completed)	[1] 4,700	5,000
Number of farms reported	[1] 4,200	5,000
Population	[2] 31,600	33,600
Number of towns	14	14
Population	39,795	42,500
Total population of towns and farms	71,395	76,100
Number of public schools	[1] 57	60
Number of churches	62	65
Number of banks	20	20
Total capital stock of banks	$1,752,500.00	$1,755,500
Amount of deposits	$24,426,056.95	$17,776,336
Number of depositors	[1] 35,000	38,000

[1] Estimated.

[2] Includes population within town-site areas.

ARIZONA-CALIFORNIA, YUMA PROJECT.

PORTER J. PRESTON, project manager, Yuma, Ariz.

The Yuma project comprises 65,000 acres of irrigable land along the Colorado River for a distance of about 28 miles from the boundary between Arizona and Mexico, in Yuma County, Ariz., and Imperial County, Calif. The water supply is diverted from the Colorado River at Laguna Dam 10 miles northeast of Yuma on the California side and is carried under the river at Yuma by an inverted siphon. Building charges are $55, $66, $75, $77, and $90 per acre for gravity lands. The limit of area of farm units is 40 acres. The duty of water averages 3 acre-feet at the farm. The soils are rich alluvium bottom land; the principal crops are cotton and alfalfa. The irrigation season is 365 days. The average temperatures for 29 years are: High, 115°, low 28°; rainfall, 40-year average, 3.1 inches.

The Mesa division comprises about 45,000 acres of mesa land in the southwest corner of Yuma County. The land is irrigated by pumping from the East Main Canal.

SUMMARY OF DATA FOR YUMA PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		110,000
Public land entered to June 30, 1922	18,060	
Public land open to entry on June 30, 1922	286	
Public land withdrawn on June 30, 1922	33,284	
Indian land, June 30, 1922	8,200	
Private land, June 30, 1922	50,170	
Acreage Service could supply, season of 1921		65,000
Acreage irrigated, season of 1921		52,400
Acreage cropped under irrigation, season of 1921		52,400
Value of irrigated crops, season of 1921		$2,098,060
Value of irrigated crops per acre cropped		$40.04
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$496,683.13	
Encumbrances, disbursements and liabilities	424,130.71	
Unencumbered balance July 1, 1922		$72,552.42
Fiscal year 1923, amount specified in appropriation act		550,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	[1] $196,541.59	$8,942,183.14
Less—		
Funds advanced and unapplied cooperative credits	[1] 277,029.10	101,113.89
Water-right contracts—		
Project lands (56,155 acres)	114,463.50	5,611,355.53
Total	[1] 162,565.60	5,712,469.42
Balance	[1] 33,975.99	3,229,713.72

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$330,742.08	$1,276,629.68	$308,419.16	$1,404,723.38
Less—				
Charges billed or contracted	260,970.64	880,248.53	256,201.47	884,720.93
Penalties and discounts (net)	*343.46	1,914.77	2,053.45	2,701.37
Total	260,627.18	882,163.30	258,254.92	887,422.30
Balance	70,114.90	394,466.38	50,164.24	517,301.08

[1] Contra.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$11,515,823.14	$126,942.49	$11,642,765.63
Less collections	2,528,201.10		2,528,201.10
Net investment	8,987,622.04	126,942.49	9,114,564.53

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Funds advanced and unapplied cooperative credits	.....	$101,113.89	.....	$101,113.89	.....	.....
Water-right charges	$141,350.62	885,653.07	$110,860.94	825,769.63	$951.26	$58,932.18
Total	141,350.62	986,766.96	110,860.94	926,883.52	951.26	58,932.18
Construction water-right charges paid in advance	.....	.....	.....	4,437.76	.....	.....
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (63,197 acres)	256,201.47	884,720.93	162,435.80	674,324.24	12,264.63	198,132.06
Penalties and interest	4,872.25	11,656.31	4,597.65	11,381.71	274.60	.....
Total	261,073.72	896,377.24	167,033.45	685,705.95	12,539.23	198,132.06
Operation and maintenance charges paid in advance	.....	.....	.....	859.50	.....	.....
Revenues:						
Rentals of irrigating water	11,799.67	462,761.51	12,803.39	460,419.68	101.55	2,240.28
Rentals of grazing and farming lands	1,754.09	9,324.11	1,820.29	8,660.39	.....	663.72
Total	13,553.76	472,085.62	14,623.68	469,080.07	101.55	2,904.00
Miscellaneous uncollected [1]	.....	.....	.....	.....	.....	257,065.94
Other miscellaneous collections	.....	.....	30,711.58	441,234.30	.....	.....
Grand total collections	.....	.....	323,229.65	2,528,201.10	.....	.....

[1] Includes $252,000 to be reimbursed from the Yuma auxiliary, a special fund.

ACTIVITIES DURING FISCAL YEAR.

Construction was confined largely to drainage work on the South, East, East Central, and North Drains, using a 1-yard and a 2-yard drag line. Nine miles of open drain were built, the excavation comprising 263,600 cubic yards of earth. Each machine worked two shifts. Ten metal flumes, 11 timber highway bridges, and 6 minor structures were built in connection with drainage work. There was no seeped land at the close of the fiscal year except in the bottoms of deep sloughs.

Practically all ditch cleaning was done by Ruth dredges, of which four were in operation. During the year 165 miles of laterals were cleaned; 4.4 miles of drain were cleaned by drag lines.

On July 1, 1921, the river broke through the levee below Yuma, flooding 1,675 acres of land, of which 1,100 were cultivated. This necessitated rebuilding about one-half mile of the levee and West Main Canal, involving 32,000 cubic yards of earthwork and 17,800 cubic yards of rock revetment. On September 30 a heavy rainstorm washed large quantities of sand and gravel into the main canal on the Reservation division, breaking the banks in several places. Repairs involved the handling of 62,000 cubic yards of material. The total cost of repairing the above flood damage was $76,000.

The operation and maintenance charge for 1922 is $4 per acre minimum for 2½ acre-feet or 3½ acre-feet for certain sandy lands, with excess water at $1 or an alternate choice of $4.50 minimum for

2½ acre-feet, with excess water, at 50 cents per acre-foot. About 7,700 acres accepted the latter alternate. Wash water for reclaiming alkali land is furnished at 50 cents per acre-foot, the cost of pumping drainage water on the Valley division, and free of charge on the Reservation division, where pumping is not required; also water in excess of the amount delivered under the minimum charge, which is to be used for growing fertilizer crops or depositing silt on certain sandy land, is furnished free of charge. The time within which water-right application must be made for lands in excess of 160 acres held by one person, lands held by nonresident owners, and land held under homestead entries in excess of one farm unit, was extended by order of the Secretary to December 1, 1924, after which no water will be furnished except under water-right application.

Mesa division.—The building of the B lift pumping plant and 72-inch force main was continued and carried to completion. All machinery was installed and the plant was tested out in March. The plant was put in operation May 1, 1922. At the Mesa quarry and pipe manufacturing plant, 41,008 linear feet of lock-joint pipe were manufactured between November 1 and April 25. Laterals were built and turnouts installed for the delivery of water to 2,450 acres of mesa land.

During the fiscal year 60,000 cubic yards of excavation were made (mostly trenches for the laying of lock-joint pipe), 3,800 cubic yards of concrete were placed, 5,200 cubic yards of rock were crushed for concrete aggregate, and 41,008 linear feet of lock-joint pipe were cast.

Operation data, Yuma project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Area for which service was prepared to supply water	72,440	73,000	73,000	[1] 70,000	[1] 65,000	[1] 65,000
Acreage irrigated	29,483	36,956	45,670	53,284	54,550	52,400
Miles of canal operated	316	335	338	323.2	323.2	323.2
Water diverted (acre-feet) [2]	249,700	337,597	314,900	478,185	468,900	482,000
Water delivered to land (acre-feet)	94,393	136,541	150,229	155,417	160,330	140,900
Acre-feet to acre for area under cultivation	3.2	3.7	3.3	2.9	2.94	2.69

[1] Reduction due to exclusion of North Gila Valley land and lands along levee subject to seepage.
[2] Of the water diverted, from 100,000 to nearly 200,000 acre-feet each year are wasted, of which the largest part flows into the Colorado River at the Colorado spillway above Yuma, and this water can be diverted for irrigation farther down the river.

Settlement data, Yuma project.

Item.	1916	1917	1918	1919	1920	1921
Total number of farms on project (when completed)	4,000	4,000	4,000	5,190	5,750	5,750
Number of farms reported	790	900	1,185	1,225	1,230	1,211
Population	2,002	2,700	4,300	5,000	5,100	4,800
Number of towns	6	6	6	6	6	6
Population	5,345	6,735	7,590	7,600	7,110	6,665
Total population of towns and farms	7,347	9,435	11,890	12,600	12,210	11,465
Number of public schools	17	20	20	18	[1] 15	16
Number of churches	9	9	10	11	[2] 23	[2] 23
Number of banks	4	4	4	6	6	5
Total capital stock of banks	.....	.....	$175,000	$255,000	$255,000	$230,000
Amount of deposits	.....	.....	$1,321,468	$1,923,287	$2,100,000	$1,927,000
Number of depositors	.....	.....	4,572	5,288	9,175	5,900

[1] Reduction due to consolidation.
[2] Religious organizations; figures prior to 1920 relate to church buildings.

CALIFORNIA, ORLAND PROJECT.

R. C. E. Weber, project manager, Orland, Calif.

The Orland project is located in Glenn and Tehama Counties, with reservoir in Colusa County. Stony Creek, the source of the water supply, has a drainage area of 735 square miles above the project diversion dams; the annual mean run-off near Fruto is 405,000 acre-feet.

The average elevation above sea level is 250 feet; the mean rainfall, 18.4 inches; and the temperature range, 21° to 114° F. The soil is sandy and gravelly loam, silt loam, and clay loam. The principal products are alfalfa, milo, citrus and other fruits, nuts, and vegetables. The limit of area of farm units is 40 acres, except that original subscribers are qualified to hold up to 160 acres.

The irrigation plan provides for storage at East Park Reservoir on Little Stony Creek with a feed canal 7 miles long connecting the reservoir with Stony Creek. For the irrigation of project lands located in the vicinity of Orland, water is diverted from Stony Creek by two diversion weirs into the South and North Canals, which serve 14,600 and 6,100 acres of land, respectively. Stored water from the reservoir is conveyed in the natural channel of Stony Creek to the project diversions. The distribution system consists of 2,000 structures and 146 miles of canals and laterals, 71 miles of which are concrete lined. The plan also includes a high-line canal, from which power may be developed for pumping. The present limits may be considered as a division of the Sacramento Valley project. It may be extended by constructing additional reservoirs on Stony Creek, the most feasible of which appears to be Millsite, near Fruto.

SUMMARY OF DATA FOR ORLAND PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:	
Irrigable acreage when project is complete	[1] 20,657
Private land, June 30, 1922	[1] 20,657
Acreage service could supply, season of 1921	20,657
Acreage irrigated season of 1921	14,700
Acreage cropped under irrigation, season of 1921	11,450
Acreage dry-farmed, season of 1921	400
Value of irrigated crops, season of 1921	$495,810
Value of irrigated crops per acre cropped	$43.30
Value of dry-farmed crops, season of 1921	$3,200
Value of dry-farmed crops per acre cropped	$8.00
Finances:	
Appropriations—	
Fiscal year 1922, all congressional authorizations	$125,735.35
Encumbrances, disbursements and liabilities	74,213.05
Unencumbered balance July 1, 1922	$51,522.30
Fiscal year, 1923, amount specified in appropriation act	125,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost [a]	$42,025.78	$1,057,959.13
Less—		
Funds advanced and unapplied cooperative credits	347.16	621.23
Water-right contracts—		
Project land, 19,336.95 acres	2,321.00	1,063,532.25
Total	2,668.16	1,064,153.48
Balance	39,357.62	*6,194.35

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$37,596.48	$165,191.22	30,352.31	180,035.43
Less—				
Charges billed or contracted	41,550.17	173,206.44	41,550.17	173,206.44
Penalties and discounts (net)	*2,059.12	*8,533.27	*2,059.12	*8,533.27
Total	39,491.05	164,673.17	39,491.05	164,673.17
Balance	*1,894.57	518.05	*9,138.74	15,362.26

[a] Construction cost includes $13,242.34 spent on Millsite investigations.
* Contra.

[1] Includes 320 acres vested rights, 145 acres town, and 17 acres school sites.

Summary of data for Orland project to end of fiscal year 1922—Continued.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$1,373,478.36	$24,373.16	$1,397,851.52
Less collections	493,527.77		493,527.77
Net investment	879,950.59	24,373.16	904,323.75

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected June 30, 1922.
To return net construction cost:						
Funds advanced and unapplied cooperative credits	$347.16	$621.23	$347.16	$621.23		
Water-right charges	44,388.63	168,663.42	44,388.63	168,663.42		
Total	44,735.79	169,284.65	44,735.79	169,284.65		
Construction water right charges paid in advance				5,385.16		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (20,176.65 acres)	41,544.52	173,206.44	39,375.04	164,531.89	[1] $8,564.34	$110.21
Penalties and interest	.15	31.07	.15	31.07		
Total	41,544.67	173,237.51	39,375.19	164,562.96	8,564.34	110.21
Revenues:						
Rentals of irrigating water	229.50	120,154.50	229.50	120,154.50		
Rentals of grazing and farming lands		32.00		32.00		
Total	229.50	120,186.50	229.50	120,186.50		
Miscellaneous uncollected						4.60
Other miscellaneous collections			4,093.32	34,108.50		
Grand total collections			88,433.80	493,527.77		

[1] Discounts.

ACTIVITIES DURING FISCAL YEAR.

Construction during the fiscal year consisted of placing 101,297 square yards of concrete lining on 12.1 miles of laterals under supplemental construction. Surveys and investigations in connection with the proposed development of additional storage on Stony Creek at Millsite were undertaken at the request of the board of directors of the Orland Unit Water Users' Association, who have agreed to repay the cost of the investigation up to an amount not exceeding $10,000 by increased operation and maintenance charges, in event no construction is undertaken, to absorb the preliminary expense. The work performed consisted of a detail topographic survey of the dam site, extension of the reservoir topography to the 680 foot contour, and diamond drilling at the dam site, field work on all of which except the latter was completed during the fiscal year.

The rainfall during the winter preceding the irrigation season of 1921 was sufficient to provide full storage at East Park Reservoir and the natural flow of the creek was such that draft on storage was not necessary until the middle of June. As a result an ample water supply was available and agricultural conditions in general were favorable for good crop yields. No extensive renewals were necessary and no unusual difficulties encountered in operating and maintaining the irrigation works.

Operation data, Orland project, by calendar years.

	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	[1] 20,533	[1] 20,533	[1] 20,533	[1] 20,533	[2] 20,657
Acreage irrigated	12,729	14,764	15,203	13,872	14,700
Miles of canal operated	138	138	138	138	146
Water stored (acre-feet)	51,000	46,900	51,000	62,000	13,680
Water diverted (acre-feet)	74,000	45,900	72,000	33,800	68,867
Water delivered to land (acre-feet)	44,400	28,300	45,000	20,600	44,200
Per acre of land irrigated (acre-feet)	3.50	1.91	2.95	1.49	3.01

[1] Includes 320 acres of vested water rights and 46 acres of town and school sites.
[2] Includes 320 acres of vested water rights and 162 acres of school and town sites.

CROPS AND LIVE STOCK.

About 82 per cent of the total irrigable area of the project was contained in the farms which were under irrigation in 1921. There was an increase of 800 acres in the area irrigated over that for the preceding year and 19 new farms were brought under irrigation. Alfalfa continued to be the predominating crop, followed by milo, to which about 2,000 acres were planted and which was the most uniform in growth and yield ever raised. Citrus fruits and almonds made a very appreciable gain in yield as a result of young orchards coming into bearing. Crop yields were greater than for 1920 owing to the limited water supply available during that year, but prices were lower for 1921, resulting in a decreased crop return. The dairying industry partially recovered from the effects of the dry year of 1920 as evidenced in the increase, both in number and value, of dairy cattle during the year, together with the increase in butter production of the two Orland creameries. The stock and equipment inventory showed an increase of $79,500 during the year.

Settlement data, Orland project.

	1917	1918	1919	1920	1921
Total number of farms on project	699	725	846	908	936
Population	1,900	2,000	2,250	2,200	2,250
Number of irrigated farms	531	593	602	644	663
Operated by owners	483	549	549	592	623
Operated by tenants	48	44	53	52	40
Population	1,518	1,589	1,768	1,844	1,892
Number of towns	1	1	1	1	1
Population	1,550	1,600	1,700	1,700	1,700
Total population	3,450	3,600	3,950	3,900	3,950
Number of public schools	8	9	10	10	10
Number of churches	7	7	7	7	7
Number of banks	2	2	2	2	2
Total capital stock	$141,000	$141,000	$141,000	$171,000	$171,000
Amount of deposits	$755,000	$950,000	$1,100,000	$1,020,000	$896,000
Number of depositors	2,420	2,800	3,000	2,900	2,800

COLORADO, GRAND VALLEY PROJECT.

S. O. HARPER, project manager, Grand Junction, Colo.

The Grand Valley project is in Mesa County, Colo. The irrigation plan provides for the diversion of water from the Colorado River by means of a dam about 8 miles northeast of Palisade, Colo., into a canal system on the north side of the river, for the irrigation of 45,000 acres of land along the north boundary of the Grand Valley. About 35,000 acres will be supplied by gravity and 10,000 acres by electrically-operated pumping plants to be located on the gravity canal.

Water service is also furnished through the project works to 8,400 acres of land in the Palisade and Mesa County irrigation districts, and an extension is proposed to supply the Orchard Mesa irrigation district, which includes 10,000 acres of land on the south side of the Colorado River, to be known as the Orchard Mesa Pumping division.

The features which have been completed include the Colorado River diversion dam, the first 55 miles of the main canal extending from the headworks to West Salt Creek, and laterals to supply 30,500 acres of the gravity division of the project. A cooperative system of drains and outlets through the Grand Valley drainage district has been completed and several miles of drains have been constructed to reclaim the principal seeped areas on the project. A pumping plant and other works to supply the Palisade and Mesa County irrigation districts have also been completed. The uncompleted features are the last 7 miles of the main canal, laterals to supply 5,000 acres of the gravity division, the power and pumping systems, drainage works which may be required in the future, and the reconstruction of the Orchard Mesa irrigation system.

SUMMARY OF DATA FOR GRAND VALLEY PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		55,000
Public land entered to June 30, 1922	13,442	
Public land open to entry on June 30, 1922	403	
Public land withdrawn on June 30, 1922	12,310	
Private land, June 30, 1922	28,845	
Acreage service could supply, season of 1921		[1] 38,400
Acreage irrigated, season of 1921		[2] 12,300
Acreage cropped under irrigation, season of 1921		[2] 11,390
Value of irrigated crops, season of 1921		$356,730
Value of irrigated crops per acre cropped		$31.32
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$431,767.93	
Encumbrances, disbursements and liabilities	87,230.99	
Unencumbered balance July 1, 1922		344,536.94
Fiscal year 1923, amount specified in appropriation act		440,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$34,017.28	$3,765,198.61
Less funds advanced and unapplied cooperative credits		156.63
Balance	34,017.28	3,765,041.98

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$4,055,858.95	$65,345.44	$4,121,204.39
Less collections	257,043.86		257,043.86
Net investment	3,798,815.09	65,345.44	3,864,160.53

[1] Includes Palisade and Mesa County irrigation districts.
[2] Project lands only.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost: Funds advanced and unapplied cooperative credits		$156.63		$156.63		
Revenues:						
Rentals of irrigating water.	$58,890.58	168,828.36	$40,050.27	139,774.49	$1,137.29	$27,916.58
Rentals of grazing and farming lands	25.00	209.00	25.00	147.00	0	62.00
Total	58,915.58	169,037.36	40,075.27	139,921.49	1,137.29	27,978.58
Miscellaneous uncollected						79.82
Other miscellaneous collections			7,811.36	116,965.74		
Grand total collections			47,886.63	257,043.86		

ACTIVITIES DURING FISCAL YEAR.

Canal and lateral systems.—Small sublaterals, required to supply lands not previously farmed, were completed and minor structures required for making deliveries to new lands installed. Two thousand linear feet of new laterals were constructed, involving 800 cubic yards of excavation, and 306 minor wooden structures installed.

Drainage system.—The construction of the cooperative system of drains and outlets through the Grand Valley drainage district was completed in September, 1921. Two drag-line excavators were operated on the drainage work during the year and completed 4.3 miles of open drain involving 135,000 cubic yards of excavation.

On February 18, 1922, a contract was entered into between the United States, the Grand Valley Water Users' Association, and the Orchard Mesa irrigation district providing for the expenditure of not to exceed $1,000,000 for the reconstruction of the irrigation system, construction of a drainage system, and settlement of the outstanding indebtedness. At the end of the fiscal year the district had practically completed arrangements for the settlement of the indebtedness in accordance with the provisions of the contract, which will permit construction work to be started in the near future.

The total irrigable area included in the farms irrigated in 1921 was 19,806 acres. The total area irrigated on the project during the season was 12,300 acres and the area actually cropped was 11,390 acres, in addition to the 8,400 acres included in the two irrigation districts.

On account of the mild winter and lack of snowfall in the spring of 1921, there was a demand for water at a much earlier date than usual and diversions were started on March 15. On August 23 storms of unprecedented severity caused one bad break in the main canal. It was necessary to build a detour canal around the washed-out section, about 800 feet in length, and water service was not restored until September 7. There was little demand for irrigation water and practically no damage to crops resulted. The total damage to the project irrigation system from the storms amounted to about $4,500 which was only a fraction of the damage to other irrigation systems in the valley.

Operation data, Grand Valley project, by calendar years.

Item.	1917	1918	1919	1920	1921
Acreage for which service is prepared to supply water	35,000	35,000	[1] 38,400	[1] 38,400	[1] 38,400
Acreage irrigated	5,289	8,102	[1] 18,449	[1] 19,484	[1] 20,590
Miles of canals operated	150	168	175	178	175
Water diverted, acre-feet	55,891	74,352	[1] 133,364	[1] 142,527	[1] 145,416
Water delivered to land, acre-feet	18,715	29,856	[2] 38,307	[2] 36,024	[2] 43,978
Per acre of land irrigated	3.54	3.69	[2] 3.81	[2] 3.07	[2] 3.57

[1] Includes Palisade and Mesa County irrigation districts.
[2] Project lands only.

CROPS AND SETTLEMENT.

The principal crops produced on the project were alfalfa, sugar beets, apples, wheat, potatoes, oats, and corn. The yield of practically all crops was better than average but the returns were low. On account of the general depression in agriculture there was comparatively slight demand for farm lands and little progress along settlement lines was made.

Settlement data, Grand Valley project.

	1917	1918	1919	1920	1921
Total number of farms on project [1]	900	900	900	825	825
Population	480	759	884	1,019	1,064
Number of irrigated farms	202	317	324	376	402
Operated by owners or managers	97	186	201	251	264
Operated by tenants	105	131	123	125	138
Population	480	759	884	1,019	1,064
Number of towns	[2] 6	[2] 6	[2] 6	[2] 6	[2] 6
Population	[2] 10,700	[2] 10,700	[2] 11,266	[2] 11,415	[2] 11,246
Total population in towns and on farms	[2] 11,180	[2] 11,459	[2] 12,150	[2] 12,434	[2] 12,310
Number of public schools	[2] 24	[2] 20	[2] 22	[2] 23	[2] 23
Number of churches	[2] 28	[2] 28	[2] 28	[2] 28	[2] 28
Number of banks	[2] 7	[2] 7	[2] 7	[2] 7	[2] 7
Total capital stock	[2] $411,000	[2] $432,000	[2] $432,000	[2] $465,000	[2] $465,000
Total amount of deposits	[2] $2,525,675	[2] $3,030,621	[2] $3,743,714	[2] $3,259,780	[2] $3,621,420
Total number of depositors	[2] 7,462	[2] 8,681	[2] 10,042	[2] 10,150	[2] 10,975

[1] Estimated.
[2] These items include area adjacent to project.

COLORADO, UNCOMPAHGRE PROJECT.

L. J. FOSTER, project manager, Montrose, Colo.

The Uncompahgre project is in southwestern Colorado, in Montrose and Delta Counties, on the Denver & Rio Grande Railroad. The project towns and population are, Montrose, 4,000; Olathe, 750; and Delta, 2,700.

The irrigation plan provides for the diversion of water from the Gunnison River by means of the Gunnison Tunnel, 6 miles long, and the South Canal, 11.7 miles long, to supplement the flow of the Uncompahgre River for the irrigation of lands in the Uncompahgre Valley. To distribute the waters of the Uncompahgre and Gunnison Rivers thus combined, the more important private canals taking water from the Uncompahgre River have been purchased, enlarged, and extended by the Government, and in addition high-line lateral systems have been constructed on each side of the valley.

The irrigation season extends from April 1 to October 31, 214 days, in all Government canals except the Loutsenhizer, under which the season extends to November 15.

The average elevation of the irrigable area is 5,500 feet above sea level; the average annual precipitation on the project for 20 years, 9.63 inches; and the range of temperature, −25° to 98° F. For 1921 at Montrose, 2° to 97°.

The soils of the irrigable area are red sandy, gravel, adobe, and clay loams. The principal products are alfalfa, grain, fruits, sugar beets, potatoes, and other vegetables. The principal markets are Denver, Omaha, and Kansas City for live stock; Denver, Missouri River points, and Texas for fruit, potatoes, and onions.

The project is completed with the exception of the acquisition of a few private laterals.

SUMMARY OF DATA FOR UNCOMPAHGRE PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		97,410
Public land entered to June 30, 1922	19,687	
Public land open to entry on June 30, 1922	1,094	
Public land withdrawn on June 30, 1922	799	
Private land, June 30, 1922	75,830	
Acreage service could supply, season of 1921		97,410
Acreage irrigated, season of 1921		63,760
Acreage cropped under irrigation, season of 1921		63,600
Value of irrigated crops, season of 1921		$2,614,300
Value of irrigated crops per acre cropped		$41.10
Finances:		
Appropriations—		
Fiscal year 1922; all Congressional authorizations	$363,402.76	
Encumbrances; disbursements and liabilities	154,762.70	
Unencumbered balance July 1, 1922		$208,640.06
Fiscal year 1923; amount specified in appropriation act		215,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$32,443.97	$6,667,183.45
Less—		
Loss [1]		47,370.81
Water-right contracts, project land (97,410 acres)	6,713,584.50	6,713,584.50
Total	6,713,584.50	6,760,955.31
Balance	*6,681,140.53	*93,771.86

[1] Contract with Uncompahgre Valley Water Users' Association dated May 7, 1918.
*Contra.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$7,910,905.76	$80,409.79	$7,991,315.55
Less collections	1,308,116.33		1,308,116.33
Net investment	6,602,789.43	80,409.79	6,683,199.22

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$933.80	$933.80	$933.80	$933.80	.....	.....
Water-right charges advanced	.....	.....	.....	1,775.00	73,162.17	.....
Revenues:						
Rentals of irrigating water	131,617.52	1,172,244.13	133,034.79	1,083,222.22	.....	89,021.91
Rentals of grazing and farming lands	25.00	107.00	25.00	107.00	.....	.....
Total	131,642.52	1,172,351.13	133,059.79	1,083,329.22	.....	89,021.91
Miscellaneous uncollected	.....	.....	.....	.....	.....	201.76
Other miscellaneous collections	.....	.....	2,796.20	222,078.31	.....	.....
Grand total collections	.....	.....	136,789.79	1,308,116.33	.....	.....

ACTIVITIES DURING FISCAL YEAR.

The principal construction work consisted in the enlargement, and installation of minor structures on formerly private laterals taken over by the Government.

During the season of 1921 the service supplied and distributed water for the irrigation of 63,759 acres of land, of which 5,361 acres were supplied from the South lateral system; 5,040 acres from the West lateral system; 19,872 acres from the Montrose & Delta lateral system; 5,401 acres from the Loutsenhizer lateral system; 6,589 acres from the Selig lateral system; 15,070 acres from the Ironstone lateral system; 4,874 acres from the East lateral system; and 1,552 acres from the Garnet lateral system.

During the year 446,225 acre feet of water were diverted into the canals operated by the service and 415,599 acre-feet were delivered to 1,639 farms.

Heavy rains during the latter part of the irrigation season of 1921 did considerable damage in local drainage areas of the project, but did not seriously interfere with the delivery of water.

Extensive repairs were made during the winter of 1921–22 to the headworks of the Montrose and Delta and Selig Canals, made necessary by the damaging floods of June, 1921.

Routine maintenance work consisted of brushing canal banks, removing weeds after windstorms, spading banks, removing gravel from headworks, repairing and raising banks, and replacing structures.

A disastrous slide occurred on May 25 on the side hill where the Montrose & Delta Canal reaches the top of Spring Creek Mesa. After an attempt of several days to raise the sliding ditch bank and maintain an uninterrupted flow of water, the slide had reached such proportions that it became necessary to excavate the ditch section farther back into the hill for a substantial foundation and build a bench flume. The flume as constructed is 528 feet long, 23 feet 6 inches in depth, and has a capacity of 500 second-feet.

Operation data, Uncompahgre project, by calendar years.

	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	90,000	100,000	100,000	100,000	[1] 97,410
Acreage irrigated	53,108	58,270	60,906	64,180	63,760
Miles of canal operated	415	413	442	448	452
Water diverted (acre-feet)	368,148	423,050	420,176	429,820	446,225
Water delivered to land (acre-feet)	316,365	367,144	390,770	365,853	415,599
Per acre of land irrigated (acre-feet)	5.96	6.30	6.42	5.70	6.52

[1] Decrease due to reclassification.

CROPS AND SETTLEMENT.

All crops made a smaller return per acre than in 1920, with the exception of onions and beans. The onion average per acre was the highest in the history of the project. The yield from the alfalfa crop suffered on account of rainy periods during June and July. The apple crop decreased in yield as the fruit did not set well on account of the heavy production of the previous year. The year was favorable for wheat and sugar beets. The potato decrease was due to diseased seed, a dry year for germination, and a hot wet summer. The usual difficulty was experienced in obtaining suitable cars for the shipment of crops from the project.

Settlement data, Uncompahgre project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	1,402	1,514	1,526	1,588	1,639
Population	4,613	5,279	5,471	6,015	6,166
Number of irrigated farms	1,402	1,514	1,526	1,588	1,639
Operated by owners or managers	809	949	1,012	1,077	941
Operated by tenants	593	565	514	511	698
Population	4,613	5,279	5,471	6,015	6,166
Number of towns	3	3	3	3	3
Population	6,950	6,950	6,950	7,450	7,450
Total population in towns and farms	11,563	12,229	12,421	13,465	13,616
Number of public schools	26	26	27	27	27
Number of churches	27	27	27	27	27
Number of banks	8	8	8	8	8
Total capital stock	$515,700	$588,800	$594,025	$621,763	$618,250
Amount of deposits	$4,858,903	$4,484,626	$5,550,465	$4,925,150	$3,219,773
Number of depositors	9,500	10,000	11,000	11,000	11,000

IDAHO, BOISE PROJECT.

J. B. Bond, project manager, Boise, Idaho.

The Boise project is located in the counties of Ada, Boise, Canyon, and Elmore, Idaho; and Malheur, Oreg. It is served by the Oregon Short Line Railroad and branch lines; also the Idaho Traction and Caldwell Traction Co. electric lines. The length of the irrigation season is 184 days from April 5. The average elevation of the irrigable area is 2,500 feet above sea level. The rainfall at Boise for 58 years averaged 13.67 inches. The greater part of this precipitation occurs outside of the growing season. The average highest recorded temperature for 23 years is 102° F. and the average lowest temperature for the same period is 3° F. The character of the soil is clayey loam, light sandy loam, and sandy loam. The principal products are alfalfa, wheat, oats, clover, potatoes, apples, prunes, and head lettuce. The principal markets are Boise, Nampa, Caldwell, and Meridian, Idaho; Portland, Oreg.; and eastern cities. The limiting area of farm units on public land is 80 acres and on private land 160 acres.

The irrigation plan provides for storage of water in the Arrowrock Reservoir on Boise River, about 22 miles above Boise, and in the Deer Flat Reservoir near Caldwell and Nampa, Idaho; the diversion of water from Boise River by the Boise River Dam, about 8 miles above Boise; the distribution of water on the south side of Boise River, through the Main Canal, leading from the dam to the Deer Flat Reservoir; distributing laterals heading in the Main Canal; distributing canals heading in the Deer Flat Reservoir; and distributing canal systems heading in the Boise River below the Boise River Dam; and the distribution of water on the north side of the Boise River to a small area of land east of Boise through a canal system heading in the Boise River Dam. Water is diverted from two large drains in the Pioneer irrigation district and carried through a gravity canal across the Boise River near Caldwell to supply 6,500 acres in the Notus division.

SUMMARY OF DATA FOR BOISE PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		[1] 353,600
Public land entered to June 30, 1922	67,468	
Public land withdrawn on June 30, 1922	5,560	
State land unsold on June 30, 1922	5,980	
Private land, June 30, 1922	274,592	
Acreage service could supply, season of 1921		[2] 282,831
Acreage irrigated, season of 1921 (crop census)		111,500
Acreage cropped, season of 1921 (crop census)		103,340
Value of irrigated crops, season of 1921		$4,203,940.00
Value of irrigated crops per acre cropped		$40.68
Finances:		
Appropriations—		
Fiscal year 1922; all congressional authorizations	$1,823,108.44	
Encumbrances, disbursements and liabilities	363,284.01	
Unencumbered balance July 1, 1922		$1,459,824.43
Fiscal year 1923, amount specified in appropriation act		1,220,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$21,378.12	$12,425,780.97
Less water-right contracts—		
Project lands, 96,050 acres	*216,665.25	7,450,242.51
Warren Act lands, approximately 163,119 acres	496,778.06	4,876,347.99
Total	280,112.81	12,326,590.50
Balance	*258,734.69	99,190.47

* Contra.

[1] Including proposed extensions.

[2] Including partial service to vested water-right land.

Summary of data for Boise project to end of fiscal year 1922—Continued.

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost (regular)	$327,437.27	$1,180,464.68	$308,971.54	$1,307,078.89
Less—				
Charges billed or contracted	334,738.18	1,201,981.15	351,005.60	1,219,655.79
Penalties and discounts (net)	*8,025.54	*21,552.86	*3,785.30	*25,121.59
Total	326,712.64	1,180,428.29	347,220.30	1,194,534.20
Balance	724.63	36.39	*38,248.76	112,544.69
Net operation and maintenance cost (drainage)	33,895.12	33,895.12	55,213.96	64,346.45
Less—				
Charges billed or contracted	93,428.01	93,428.01	153,556.06	200,205.33
Penalties and discounts (net)	*1,252.21	*1,252.21	*400.43	*1,242.17
Total	92,175.80	92,175.80	153,155.63	198,963.16
Balance	*58,280.68	*58,280.68	*97,941.67	*134,616.71

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$15,025,110.20	$50,228.93	$149,838.92	$15,225,178.05
Less collections	3,550,523.25			3,550,523.25
Net investment	11,474,586.95	50,228.93	149,838.92	11,674,654.80

*Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$379,026.78	$1,307,579.18	$215,272.42	$1,086,746.04	$25,092.00	$195,741.14
Construction water-right charges paid in advance				9,377.08		
To return net operation and maintenance cost (regular):						
Operation and maintenance charges—						
Project lands, 95,972 acres	205,367.95	713,601.74	153,548.50	576,068.89	21,482.98	116,049.87
Warren Act lands (approximately 61,319 acres)	131,214.91	455,938.65	98,106.12	368,065.36	13,726.03	74,147.27
Other lands (approximately 6,740 acres)	14,422.74	50,115.40	10,783.52	40,456.63	1,508.72	8,150.04
Penalties and interest	4,685.72	11,596.14	4,685.72	11,596.14		
Total	355,691.32	1,231,251.93	267,123.86	996,187.02	36,717.73	198,347.18
To return net operation and maintenance cost (drainage):						
Drainage charges project lands (136,227 acres)	153,556.06	200,205.33	47,335.07	67,002.51	2,051.05	131,151.77
Penalties and interest	808.88	808.88	808.88	808.88		
	154,364.94	201,014.21	48,143.95	67,811.39	2,051.05	131,151.77
Operation and maintenance charges paid in advance				17.14		
Revenues:						
Rentals of irrigating water	15,160.33	721,247.21	11,193.17	705,410.71	4,720.50	11,116.00
Rentals of power and light	12,500.33	106,327.60	7.00	96,424.61	9,902.99	
Rentals of grazing and farming lands	*458.84	20,403.34	1,148.38	20,292.71		110.63
Total	27,201.82	847,978.15	12,348.55	822,128.03	14,623.49	11,226.63
Miscellaneous uncollected						6,554.53
Other miscellaneous collections			32,562.05	598,256.55		
Grand total collections			575,450.83	3,550,523.25		

*Contra.

ACTIVITIES DURING FISCAL YEAR.

In the Arrowrock division construction consisted of placing structures necessary to the taking over of New York laterals as provided in the contract between the United States and the New York Canal Co. In the Notus division 15 timber tap boxes and 15 timber weirs were placed in order to complete the distribution system. Construction of the Riverside and Big Bend drainage was completed. The drainage organization was moved to Wilder and work was continued on drainage. About 5 miles of deep drains were completed involving 225,000 cubic yards of class 1 excavation, the placing of 40 cubic yards of concrete, and 16,950 feet b. m. of lumber.

During 1921 561,308 acre-feet of water were delivered to 2,686 farms containing an irrigated area of 153,000 acres. The average amount of water used was 3.67 acre-feet at an average cost of $2.19 per acre for operation and maintenance.

The right of the United States to divert water from the natural flow of the Boise River terminated for the season of 1921 on July 24. The full storage capacity of Arrowrock Reservoir was available on May 18, the first stored water being used on July 7. Deer Flat Reservoir was completely filled on April 12 and its storage capacity maintained until well into the irrigation season. The average seepage loss in Deer Flat Reservoir was 5.7 acre-feet per acre submerged as compared with 7.5 for 1920.

Under terms of permanent contracts water was released from Arrowrock Reservoir to supplement the vested rights of the Nampa and Meridian irrigation district, Pioneer irrigation district, Settlers Canal Co., Farmers Union Ditch Co., Farmers Cooperative Ditch Co., and the New York Canal Co.

Under a contract with the Black Canyon irrigation district the United States operated the Notus Canal during the season of 1921. At the close of the irrigation season the Notus division was turned over to the district for operation and maintenance.

Maintenance.—During the year 270 small structures were replaced and 197 new structures installed. The Richards Point wasteway was completed and successfully operated during the year. On the Deer Flat Low Line Canal concrete lining was placed at badly eroded sections amounting to 239 cubic yards. At other points on the same canal gravel riprap was placed amounting to 3,483 linear feet. A number of steel flumes were given a coat of paint before the opening of the irrigation season. At Arrowrock Dam maintenance consisted of a retaining wall along the driveway, repairs to the superintendent's house and other buildings besides repairs to the road across Deer Creek.

Operation data, Boise project, Idaho, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage to which Service was prepared to furnish water	[1] 223,866	[1] 223,866	[1] 274,339	[1] 274,125	[1] 274,379	[1] 282,831
Acreage irrigated	[2] 101,315	[2] 95,524	[2] 110,000	[2] 125,000	[2] 131,760	[2 3] 153,000
Miles of canal operated	980	982	988	989	1,000	1,016
Water diverted (acre-feet)	656,854	618,272	824,462	759,084	853,810	844,195
Water delivered to land per acre of land irrigated (acre-feet)	3.56	3.07	3.75	3.34	3.60	3.67

[1] Including partial service to vested water-rights land.
[2] Acreage served with full water supply.
[3] 111,500 covered by crop census.

Settlement data, Boise project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	3,932	3,992	3,992	4,000	4,085
Population	12,580	13,200	15,000	16,000	16,340
Number of irrigated farms	2,780	3,060	3,207	3,260	3,300
Operated by owners or managers	1,900	2,090	2,545	2,417	2,440
Operated by tenants	880	970	662	843	860
Population	8,340	9,170	10,000	11,176	11,550
Number of towns	10	10	10	10	8
Population	34,750	36,000	40,000	36,400	36,170
Total population in towns and on farms	47,330	49,200	55,000	52,400	52,510
Number of public schools	22	24	24	24	28
Number of churches	52	52	54	56	56
Number of banks	15	15	15	17	16
Total capital stock	$1,800,000	$1,800,000	$2,000,000	$1,850,000	$2,741,000
Amount of deposits	$11,500,000	$11,500,000	$13,500,000	$20,600,000	$16,326,000
Number of depositors	[1] 25,000	[1] 25,000	[1] 28,000	[1] 32,000	[1] 30,000

[1] Estimated; some banks refuse to give number of depositors.

IDAHO, KING HILL PROJECT.

WALTER WARD, project manager, King Hill, Idaho.

The King Hill project is located in the counties of Elmore, Gooding, Owyhee, and Twin Falls. The estimated population of the four project towns is as follows: Glenns Ferry, 1,225; Bliss, 200; King Hill, 180; Hammett, 80. The Oregon Short Line runs the entire length of the project. The water supply is obtained from the Malad River. The average elevation of the irrigable land is 2,750 feet above sea level. During the past 10 years the average rainfall was 9.2 inches, the average maximum temperature 107° F., and the average minimum temperature 4° F. The soil ranges from light to heavy sandy loam with some heavy clay. With an irrigation season of 193 days the project produces principally alfalfa, early vegetables, grain, and stock. These find a ready market at Portland, Boise, and small towns in southern Idaho.

SUMMARY OF DATA FOR KING HILL PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		16,978
Public land entered to June 30, 1922	518	
Public land open to entry on June 30, 1922	119	
State land unsold on June 30, 1922	370	
Private land, June 30, 1922	15,971	
Acreage service could supply, season of 1921		13,648
Acreage irrigated, season of 1921		5,900
Acreage cropped under irrigation, season of 1921		5,390
Value of irrigated crops, season of 1921		$119,210.00
Value of irrigated crops per acre cropped		$22.20

Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$340,807.85	
Encumbrances, disbursements, and liabilities	280,161.88	
Unencumbered balance July 1, 1922		$60,645.97
Fiscal year 1923, amount specified in appropriation act		450,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$261,178.80	$1,471,624.46
Less water-right contracts, project lands (16,978 acres)		2,000,000.00
Balance	261,178.80	*528,375.54

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$1,523,541.60	$91,498.11	$1,615,039.71
Less collections	67,760.55		67,760.55
Net investment	1,455,781.05	91,498.11	1,547,279.16

*Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected, cash.		Uncollected June 30, 1922.
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	
To return net construction cost, water-right charges	$76,752.20	$76,752.20			$76,752.20
Revenues, rentals of irrigating water	19,692.71	23,504.49	$19,578.79	$23,390.57	113.92
Miscellaneous uncollected					483.86
Other miscellaneous collections			9,978.19	44,369.98	
Grand total collections			29,556.98	67,760.55	

ACTIVITIES DURING FISCAL YEAR.

Construction consisted of the building of two concrete flumes, several lock-joint siphons, one wood-stave flume, and a number of earth laterals.

The two concrete flumes are of the continuous type and have a width of 6 feet, and are 3.5 feet high. Walls and floors are 4½ inches thick. The Slick flume is 7,510 feet long and the Cold Springs flume is 8,080 feet long.

Below is a list of the lock-joint pipe siphons with the diameter and length of each.

	Diameter.	Length.
	Inches.	*Feet.*
Camas Road siphon	54	193.6
Slick siphon No. 1	54	240.2
Slick siphon No. 2	54	273.5
Little Alkali siphon	48	159.0
Hammett siphon	24	4,042.0
King Hill siphon	27	1,360.0
Do	21	2,268.0

Besides the above, 91 feet of 48-inch lockjoint pipe were placed in the Glenns Ferry siphon. The King Hill and Hammett siphons are part of the lateral system, while the others are in the main canal system.

A semicircular wood-stave flume 6.8 feet in diameter and 530 feet long, on timber trestle, was built across Big Alkali Creek. Two short stretches of earth canal were built to replace short timber flumes.

Ten thousand seven hundred and sixty lineal feet of earth laterals, having a capacity of less than 50 second-feet, were built.

OPERATION AND MAINTENANCE.

A maintenance crew was kept busy installing new turnouts and weirs, replacing old ones, and in clearing weeds and moss from the canals and laterals. On July 11, 1921, service was discontinued below the inlet to Cold Springs flume, and on August 17 service was discontinued below the inlet to the Slick flume to allow construction work to proceed. All service was discontinued on October 1.

Between October 1, 1921, and April 1, 1922, all earth canals were cleaned and timber structures were repaired in preparation for the irrigation season of 1922.

On April 1, water was turned into the Main Canal, but deliveries did not commence until April 22.

Operation data, King Hill project, by calendar years.

Item.	1920	1921
Acreage for which service was prepared to supply water	11,340	13,648
Acreage irrigated	4,780	5,900
Miles of canal operated	83.2	83.2
Water diverted (acre-feet)	43,660	56,153
Water delivered to land (acre-feet)	22,420	30,028
Per acre of land irrigated (acre-feet)	4.69	5.08

Settlement data, King Hill project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	225	225	225	225	260
Population	350	350	350	424	557
Total irrigated farms	125	125	125	125	160
Operated by owners or managers	110	110	110	110	141
Operated by tenants	15	15	15	15	19
Number of towns	3	3	3	4	4
Population	1,350	1,425	1,500	1,572	1,685
Total population of towns and farms	1,700	1,775	1,850	1,974	2,242
Number of public schools	4	4	4	5	6
Number of churches	4	4	5	5	5
Number of banks	1	1	1	2	2
Total capital stock	$20,000	$20,000	$20,000	$30,000	$30,000
Amount of deposits	.....	$183,436	$245,545	$418,548	$319,036
Number of depositors	.....	758	738	1,060	824

IDAHO, MINIDOKA PROJECT.

BARRY DIBBLE, project manager, Burley, Idaho.

The project is located in Minidoka and Cassia Counties, Idaho; Jackson Lake Reservoir is in Lincoln County, Wyo. The only railroad is the Oregon Short Line. Project towns and estimated population are Burley, 5,000; Rupert, 2,500; Paul, 600; Declo, 300; Heyburn, 300; and Acequia, 50. The source of water supply is Snake River, supplemented by storage. The irrigation season is from April 1 to October 15 (198 days); average rainfall for the past 17 years, 11.9 inches; average of maximum and minimum temperatures for the past 17 years, 99° and −13.1° F. The principal products are alfalfa, wheat, oats, clover seed, sugar beets, and potatoes.

The project is watered by two canal systems, one on either side of Snake River. Power developed at the diversion dam is used in pumping water from the canals for irrigating high lands, and is also used for municipal and domestic purposes. Storage for the project is provided by a reservoir at Jackson Lake, Wyo., with a total capacity of 847,000 acre-feet, and by Lake Walcott, at the upper end of the project, with an available capacity of 100,000 acre-feet.

SUMMARY OF DATA FOR MINIDOKA PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		
Public land entered to June 30, 1922	96,357	
Public land open to entry on June 30, 1922	343	
State land unsold on June 30, 1922	28	
Private land entered to June 30, 1922	24,829	
Acreage service could supply, season 1921		121,557
Acreage irrigated, season of 1921		107,230
Acreage cropped under irrigation, season of 1921		100,720
Value of irrigated crops, season of 1921		$3,409,280
Value of irrigated crops per acre cropped		$33.85
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$2,523,015.03	
Encumbrances, disbursements, and liabilities	335,933.42	
Unencumbered balance July 1, 1922		$2,187,081.61
Fiscal year 1923, amount specified in appropriation act		1,200,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$33,331.29	6,846,239.87
Less—		
Funds advanced for construction		832,527.96
Water-right contracts—		
Project lands (120,625 acres)	*965.25	5,646,577.40
Warren Act lands (approximately 603,840 acres)		429,412.50
Other lands		7,500.00
Total	*965.25	6,916,017.86
Balance	64,296.54	*69,777.99

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$144,893.25	$1,206,570.34	$115,339.93	$1,250,610.41
Less—				
Charges billed or contracted	149,181.63	1,238,144.74	147,963.10	1,264,342.78
Penalties and discounts (net)	1,556.58	*5,284.43	7,144.20	526.13
Total	150,748.21	1,232,860.31	155,107.30	1,264,868.91
Balance	*5,854.96	*26,289.97	*39,767.37	*14,258.50

* Contra.

Summary of data for Minidoka project to end of fiscal year 1922—Continued.

	Reclamation Fund.	Judgments Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$8,884,238.18	$15,550.90	$91,087.16	$8,990,876.24
Less collections	4,340,730.94			4,340,730.94
Net investment	4,543,507.24	15,550.90	91,087.16	4,650,145.30

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Funds advanced		$832,527.96		$832,527.96		
Water-right charges	$271,881.91	1,738,053.95	$218,128.01	1,398,590.42	$153,706.69	$185,756.84
Total	271,881.91	2,570,581.91	218,128.01	2,231,118.38	153,706.69	185,756.84
Construction water-right charges paid in advance				1,879.75		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (120,625 acres)	135,146.13	1,131,749.65	159,766.57	916,540.39	66,671.75	148,537.51
Warren Act lands (approximately 603,840 acres)	12,816.97	83,204.10	13,025.45	83,026.84		177.26
Penalties and interest	8,354.02	16,902.91	8,354.02	16,902.91		
Total	156,317.12	1,231,856.66	181,146.04	1,016,470.14	66,671.75	148,714.77
Operation and maintenance charges paid in advance				7.82		
Revenues:						
Rentals of irrigating water	5,721.80	267,887.04	5,721.80	264,652.81	3,234.23	
Rentals of power and light	116,698.88	580,524.84	120,397.52	551,966.88	4,806.13	23,751.83
Rentals of grazing and farming lands	1,879.23	33,945.69	478.27	28,705.27		5,240.42
Total	124,299.91	882,357.57	126,597.59	845,324.96	8,040.36	28,992.25
Miscellaneous uncollected						1,757.43
Other miscellaneous collections			44,700.75	245,929.89		
Grand total collections			570,572.39	4,340,730.94		

ACTIVITIES DURING FISCAL YEAR.

North Side pumping division.—Topographic surveys were completed covering 154,378 acres. Some studies and estimates of cost were also made.

American Falls Reservoir.—Work in connection with the reservoir was greatly reduced owing to shortage of funds. Most of the canal companies that had subscribed for water in the reservoir failed to pay the money due under their contracts. A plan was advanced by the Idaho Reclamation Association for forming a large irrigation district to include the lands of several companies. At the end of the year the petition for the organization of the American Falls Reservoir district had been signed by 1,388 persons, owning 142,000 acres of the 500,000 included in the district. The petition was filed with the county clerk of Twin Falls County on July 1, 1922.

Commercial power.—The capacity of the Rupert substation was increased from 1,500 to 2,100 kilovolt amperes.

Operation.—Water was turned out of the Main North Side Canal on October 12, 1921, and turned into the canal on March 15, 1922. Total diversions into this canal were 457,625 acre-feet in 1921. Drain discharges during the year were 89,645 acre-feet. The South Side Canal diverted 246,304 acre-feet, of which 180,508 acre-feet were pumped. The South Side pumping stations were shut down on October 14, 1921, and started again on May 7, 1922.

Jackson Lake reservoir was filled in 1921, for the first time, to its maximum of 847,000 acre-feet. Storage water was released on July 1, 1921, and at the end of the season 151,340 acre-feet remained in the reservoir. In 1922 the reservoir was again filled to capacity.

Operation data, Minidoka project, by calendar years.

	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	120,300	120,852	121,000	121,392	121,557	121,557
Acreage irrigated	89,900	99,020	105,062	104,259	107,650	107,230
Miles of canal operated	615	633.19	634.37	634.60	634.60	634.60
Water diverted (acre-feet)	640,432	616,228	745,821	626,645	734,428	703,929
Water delivered to land (acre-feet)	334,649	305,278	390,903	349,012	383,766	[2] 99,363
Per acre of land irrigated (acre-feet) [1]	3.7	3.1	3.7	3.3	3.6	[2] 2.13

[1] Partially estimated.
[2] South Side pumping division; data from Gravity division not available.

Settlement data, Minidoka project.

Item.	1916	1917	1918	1919	1920	1921
Total number of farms on project	2,322	2,327	2,340	2,353	2,420	2,454
Population	6,468	7,467	8,490	9,029	9,177	8,848
Number of irrigated farms	1,760	2,195	2,208	2,353	2,420	2,454
Operated by owners or managers	1,352	1,725	1,556	1,877	1,863	1,987
Operated by tenants	408	470	652	476	557	467
Population	5,800	7,467	8,490	9,029	9,250	8,848
Number of towns	5	6	6	6	6	6
Population	4,100	5,300	6,600	8,500	9,000	8,445
Total population towns and farms	10,568	12,767	15,090	17,529	18,250	17,293
Number of public schools	21	20	21	28	26	22
Number of churches	21	25	25	25	29	29
Number of banks	6	6	8	8	10	[1] 6
Total capital stock	$140,000	$165,000	$240,000	$260,000	$345,000	[1] $190,000
Amount of deposits	$1,311,641	$2,522,764	$2,543,343	$3,725,691	$3,860,744	[1] $1,140,000
Number of depositors	6,370	7,350	10,663	11,086	12,725	[1] 5,900

[1] Exclusive of banks that failed.

MONTANA, HUNTLEY PROJECT.

A. R. McGINNESS, project manager, Ballantine, Mont.

The Huntley project is located in the south central part of Montana, Yellowstone County, and is tributary to the Northern Pacific and the Chicago Burlington & Quincy Railroads. There are four prosperous towns on the project—Huntley, Worden, Ballantine, and Pompeys Pillar—which provide excellent commercial facilities to all parts thereof. The entire project is practically completed, and water may be delivered to all lands from the present system. The irrigation plan provides for the diversion of water from the Yellowstone River at a point 2 miles west of Huntley and for a gravity supply to all project lands except 5,400 acres under the high-line canal and its extensions, which are served by two pumping plants located 1¼ miles east of Ballantine. These pumping plants elevate a maximum of 106 second-feet up a 45-foot lift into the high-line canal. The water supply for the project is ample and is derived direct from the Yellowstone River without diversion dam or storage works.

The soils consist of heavy clays and light sandy loams, lying at an average elevation of about 3,000 feet above sea level. Climatic conditions are favorable to the production of staple crops. The average annual rainfall is 12 to 13 inches.

SUMMARY OF DATA FOR HUNTLEY PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		32,718
Public land entered to June 30, 1922	26,286	
Public land withdrawn on June 30, 1922	2,526	
Private land entered to June 30, 1922	3,906	
Acreage service could supply, season of 1921		31,964
Acreage irrigated, season of 1921		18,800
Acreage cropped under irrigation, season of 1921		18,440
Value of irrigated crops, season of 1921		$440,770
Value of irrigated crops per acre cropped		$23.90
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$210,192.82	
Encumbrances, disbursements and liabilities	50,388.53	
Unencumbered balance July 1, 1922		$159,804.29
Fiscal year 1923, amount specified in appropriation act		170,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$18,248.41	$1,467,685.13
Less—		
Funds advanced and unapplied cooperative credits		717.64
Water-right contracts, project lands (28,160 acres)	*$8,208.30	1,324,280.44
Total	*$8,208.30	1,324,998.08
Balance	26,456.71	142,687.05

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$58,299.43	$789,976.64	40,064.53	810,284.68
Less—				
Charges billed or contracted	68,020.41	378,871.88	67,978.37	378,260.08
Penalties and discounts (net)	*797.53	*1,718.89	*67.12	*2,160.90
Total	67,222.88	377,152.99	*67,911.25	376,099.18
Balance	*$8,923.45	412,823.65	*27,846.72	434,185.50

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$2,353,604.13	$27,535.71	$2,381,139.84
Less collections	707,770.58		707,770.58
Net investment	1,645,833.55	27,535.71	1,673,369.26

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected June 30, 1922.
To return net construction cost:						
Funds advanced	.....	$717.64	.....	$717.64	.....	.....
Water-right charges	$26,000.11	366,400.79	$13,937.96	344,589.81	$339.40	$21,471.58
Total	26,000.11	367,118.43	13,937.96	345,307.45	339.40	21,471.58
Construction water-right charges paid in advance	.....	.....	.....	1,487.18	.....	.....
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (28,160 acres)	67,900.88	378,260.08	23,771.81	281,955.41	6,689.35	89,615.32
Penalties and interest	622.30	4,015.41	622.30	4,015.41	.....	.....
Total	68,523.18	382,275.49	24,394.11	285,970.82	6,689.35	89,615.32
Operation and maintenance charges paid in advance	.....	.....	.....	42.84	.....	.....
Revenues:						
Rentals of irrigating water	431.99	5,159.27	343.81	5,071.09	.....	88.18
Rentals of grazing and farming lands	892.11	11,362.88	1,635.58	10,398.46	.....	964.42
Total	1,324.10	16,522.15	1,979.39	15,469.55	.....	1,052.60
Miscellaneous uncollected	.....	.....	.....	.....	.....	73.00
Other miscellaneous collections	.....	.....	1,826.89	59,492.74	.....	.....
Grand total collections	.....	.....	42,138.35	707,770.58	.....	.....

ACTIVITIES DURING FISCAL YEAR.

Operation data, Huntley project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to deliver water	32,271	32,271	31,360	31,265	32,085	31,964
Acres irrigated	18,635	19,122	19,262	19,310	20,020	18,800
Miles canal operated	210	229	229	229	229	229
Water diverted (acre-feet)	67,873	64,344	47,982	92,638	79,079	79,186
Water delivered to land (acre-feet)	21,123	21,274	20,182	31,785	24,250	26,814
Per acre land irrigated (acre-feet)	1.13	1.11	1.06	1.64	1.21	1.42

Settlement data, Huntley project.

Item.	1916	1917	1918	1919	1920	1921
Total number farms on the project	691	691	691	691	691	691
Number of irrigated farms	550	553	561	549	603	578
Operated by owners or managers	400	368	359	315	320	377
Operated by tenants	150	185	202	234	283	201
Population	2,050	1,880	2,107	2,000	1,883	1,861
Number of towns	8	8	8	8	8	8
Population	468	610	599	599	664	673
Total population in towns and on farms	2,518	2,490	2,706	2,599	2,547	2,534
Number of public schools	8	8	8	8	8	8
Number of churches	6	6	6	6	6	7
Number of banks	3	4	4	4	4	4
Total capital stock	$60,000	$85,000	$85,000	$85,000	$95,000	$95,000
Amount of deposits	$307,414	$498,000	$540,434	$560,000	$588,362	$402,282
Number of depositors	1,180	1,375	1,400	1,400	1,711	1,475

MONTANA, MILK RIVER PROJECT.

G. E. STRATTON, project manager, Malta, Mont.
R. M. SNELL, project manager, St. Mary Storage, Browning, Mont.

The irrigable area comprises a strip of 160,208 acres of Milk River bottom land, with a maximum width of about 3 miles and a length of 150 miles, traversed from end to end by the Great Northern Railway and lying between Chinook and the mouth of the river near Glasgow. The average elevation is 2,200 feet. The average precipitation is 13.20 inches. The water supply is from natural flow and storage on both the Milk and St. Mary Rivers.

The irrigation plan provides for the storage of water in the Sherburne Lakes and its diversion through a canal 28.9 miles long, heading three-fourths of a mile below the Lower St. Mary Lake and discharging into the North Fork of Milk River, thence flowing through Canada for 216 miles and returning to the United States; the storage of water in Nelson Reservoir south of Milk River and about 20 miles northeast of Malta; a storage reservoir on Beaver Creek about 20 miles southeast of Malta; storage in Chain Lakes Reservoir, between Havre and the Canadian boundary; the discharge of stored water into Milk River as required; the diversion of water from Milk River by three or more dams near Chinook and Harlem into canals on each side of the river, for the irrigation of lands near Chinook and Harlem, comprising the Chinook division; the diversion of water from Milk River by a dam near Dodson into two canals, the North Side Canal irrigating lands near Dodson, Wagner, and Malta, and the South Side Canal conveying water to Nelson Reservoir and irrigating lands near Wagner, Malta, Bowdoin, and Ashfield; the irrigation of lands on the south side of Milk River and Beaver Creek in the vicinity of Saco and Hinsdale from the stored waters of Nelson Reservoir, comprising the Malta division; and in the Glasgow division the diversion of water at Vandalia Dam into a canal on the south side of Milk River for the irrigation of lands near Tampico, Glasgow, and Nashua. In case the normal flow of Milk River at Vandalia Dam is not sufficient for the irrigation of lands in the Glasgow division, the stored waters in Nelson Reservoir can be returned to Milk River and diverted again at Vandalia Dam.

SUMMARY OF DATA FOR MILK RIVER PROJECT TO END OF FISCAL YEAR 1922 (INCLUDING ST. MARY STORAGE).

Areas and crops:		
Irrigable acreage when project is complete		160,208
Public land entered to June 30, 1922	31,590	
Public land withdrawn on June 30, 1922	19,603	
State land unsold on June 30, 1922	6,795	
Private land, June 30, 1922	102,220	
Acreage service could supply, season of 1921		[1] 94,100
Acreage irrigated, season of 1921		[2] 42,400
Acreage cropped under irrigation, season of 1921		[3] 39,910
Value of irrigated crops, season of 1921		[4] $358,080
Value of irrigated crops per acre cropped		$8.98
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$1,078,871.08	
Encumbrances, disbursements, and liabilities	333,604.04	
Unencumbered balance July 1, 1922		$745,267.04
Fiscal year 1923, amount specified in appropriation act		690,000.00

	Milk River.		St. Mary storage.		Total.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Irrigation works, net construction cost	$271,761.41	$3,859,519.09	$36,479.74	$2,700,377.22	$308,291.15	$6,559,896.31

[1] Includes 27,727 acres on Chinook division. Reduction is due to better data on irrigable areas.
[2] Includes 26,000 acres on Chinook division.
[3] Includes 23,800 acres on Chinook division.
[4] Includes $228,250 on Chinook division.

Summary of data for Milk River project to end of fiscal year 1922 (including St. Mary storage)—Continued.

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation.	Totals.
Investment to date:				
Disbursements and net transfers	$6,910,375.10	$2,674.64	$80,724.02	$6,993,773.76
Less collections	311,772.23			311,772.23
Net investment	6,598,602.87	2,674.64	80,724.02	6,682,001.53

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
Construction water-right charges paid in advance				$1,114.00		
Revenues:						
Rentals of irrigating water	$15,372.67	$156,469.19	$23,746.65	133,539.63	$14.40	$22,915.16
Rentals of grazing and farming lands	3,920.25	23,184.15	6,354.71	22,483.33	6.00	694.82
Total	19,292.92	179,653.34	30,101.36	156,022.96	20.40	23,609.98
Miscellaneous uncollected						4,766.43
Other miscellaneous collections			15,138.13	154,635.27		
Grand total collections			45,239.49	311,772.23		

ACTIVITIES DURING FISCAL YEAR.

Malta and Glasgow divisions.—Enlargement of Nelson Reservoir from 25,000 to 66,800 acre-feet capacity was about 70 per cent completed. Work continued on lateral extensions, including numerous small structures in the vicinity of Saco and Glasgow. About 75 miles of operation and maintenance roads on main canal banks were built and the operation and maintenance office at Saco and gatetender's quarters at Dodson Dam were completed.

Chinook division.—The Paradise Valley irrigation district continued construction with a reduced force on the main canal and lateral system.

St. Mary storage, Sherburne Lakes Dam.—Modifications were made to the lower cylinder gate by filling the space between the gate and gate frame with concrete to prevent débris from collecting in this space and interfering with the operation of the gate.

St. Mary Canal.—Nineteen thousand and seventy-one cubic yards of slide material were moved from the canal section with a drag-line excavator and about 2,800 linear feet of bank were rebuilt to prevent excessive leakage.

Seepage and drainage.—Seepage is showing on the flats below Nelson Reservoir and in small areas at a number of other points on the project mostly adjacent to main canals. The first drainage construction work was done in 1921 when 1.3 miles of open drain were constructed on the Milk River flats below Nelson Reservoir.

Operation and maintenance.—During the fiscal year the rainfall was comparatively large, which, together with the low market value of farm products, resulted in comparatively small use of irrigation water. In the season of 1921 about 6,190 acre-feet of water were delivered from United States Reclamation Service canals to 11,436 acres, exclusive of 26,000 on the Chinook division, for which 33,335 acre-feet, of which 5,249 were St. Mary supplemental water, were diverted at the headgates of private canals and 4,948 acres of project land irrigated by flood waters from creeks.

Ordinary maintenance included cleaning 27.5 miles of laterals and smaller canals with the Ruth dredger at a cost of $124 per mile, and 8.5 miles of larger lateral and canals with Pawling and Harnischfeger No. 206 drag line at a cost of $0.113 per cubic yard, or $600 per mile. Unusual maintenance included filling a hole below Dodson Dam with field bowlders and concrete blocks at a cost of about $6,900.

Thirty-two thousand acre-feet of water were stored in Sherburne Lakes Reservoir between June 19 and July 26, 1921, and released later as it was not required for diversion to Milk River.

The St. Mary Canal was operated from May 9 to August 15; 66,460 acre-feet of water were diverted from St. Mary River and 54,920 acre-feet delivered to the North Fork of Milk River.

Operation data, Milk River project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service is prepared to supply water	40,358	45,000	58,750	58,900	68,600	[1] 94,100
Acreage irrigated	5,518	11,058	24,842	25,485	24,330	[2] 42,400
Miles of canal operated	[3] 184	[3] 204	[3] 254	[3] 317	[3] 361	[3] 247
Water diverted	[4] 61,534	[4] 68,503	[4] 74,924	[4] 86,680	[4] 80,786	[5] 54,444
Water delivered to the land (acre-feet)	3,700	11,195	16,900	21,500	10,460	[4] 6,190
Per acre of land irrigated (acre-feet)	[4] 0.67	[4] 1.01	[4] 0.68	[4] 0.84	[4] 0.58	[4] 0.54

[1] Includes 27,727 acres on Chinook division. Reduction on Malta and Glasgow divisions is due to better data on irrigable areas.
[2] Includes 26,000 acres on Chinook division.
[3] Does not include Chinook division.
[4] Includes water for Nelson Reservoir.
[5] Includes water for Nelson Reservoir, but does not include 33,335 acre-feet diverted for Chinook division.

Settlement data of irrigated district, Milk River project (exclusive of St. Mary storage.)

Item.	1917	1918	1919	1920	1921
Total number of farms on project	192	217	249	466	364
Population	580	688	757	867	816
Number of irrigated farms	112	184	247	230	178
Operated by owners or managers	77	140	186	208	134
Operated by tenants	35	44	61	22	44
Population	404	600	750	763	484
Number of towns	6	9	11	15	15
Population	5,000	6,000	6,500	7,796	7,170
Total population on farms and towns	5,580	6,688	7,257	8,559	7,986
Number of public schools	14	18	20	[1] 38	[1] 38
Number of churches	15	18	22	[1] 25	[1] 25
Number of banks	10	15	23	[1] 25	[1] 24
Total capital stock	$375,000	$525,000	[1] $780,000	[1] $765,000	[1] $825,000
Amount of deposits [2]	$3,238,000	$3,219,000	[1] $5,279,730	[1] $4,500,000	[1] $3,562,000
Number of depositors [2]	9,156	11,640	17,600	14,000	12,500

[1] Includes Chinook division.
[2] Deposits received from large area not in project.

MONTANA, SUN RIVER PROJECT.

GEO. O. SANFORD, project manager, Great Falls, Mont.

The Sun River project is located in Cascade, Chouteau, Lewis and Clark, and Teton Counties, lying to the north and west of Great Falls, Mont. It is served by lines of the Great Northern and the Chicago, Milwaukee & St. Paul Railways. The sources of water supply are Sun River and its tributaries, Deep Creek, Bowl Creek, and Basin Creek. The average elevation of the irrigable area is about 3,700 feet above sea level; the soil is loam, clay, and alluvium. The average annual rainfall is 10.9 inches; the average annual temperatures are: Maximum, 96° F.; minimum, −33° F.; mean 44° F. The length of the irrigation season is from May 1 to October 10, 163 days; the principal crops are hay, grain, vegetables, live stock, and dairy products. The principal markets are Great Falls, St. Paul, Minneapolis, and Chicago.

The Fort Shaw division is watered by a canal system taking water from the Sun River. For the irrigation of lands north of Sun River, water is diverted from the North Fork of Sun River and is carried through Pishkun, Sun River Slope, and Greenfields Canals to the head of the irrigable lands in Greenfields division. The distribution system has been built for the irrigation of 25,000 acres in part 1 of Greenfields division, and for 2,300 acres in Big Coulee division. That for about 12,000 acres in part 2 of Greenfields division is under construction.

Plans for future development provide for storage works on the upper North Fork of Sun River, enlargement of Pishkun, Sun River Slope, and Greenfields Canals, and construction and extension of lateral systems under the canals. Possible future development may include the diversion of Bowl and Basin Creeks across the Continental Divide into Sun River drainage, the enlargement of Willow Creek Reservoir and diversion of water from North Fork of Sun River thereto, the enlargement of Pishkun Reservoir and diversion of water from Deep Creek thereto, storage works on Muddy Creek and in Benton Lake, and canal systems for the Vaughn, Benton, and Great Falls divisions.

SUMMARY OF DATA FOR SUN RIVER PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		169,700
Public land entered to June 30, 1922	42,900	
Public land withdrawn on June 30, 1922	39,000	
State land unsold on June 30, 1922	9,500	
Railroad land unsold on June 30, 1922	249	
Other private land, June 30, 1922	78,051	
Acreage service could supply, season 1921		40,057
Estimated acreage service could supply, season 1922		42,300
Acreage irrigated, season of 1921		21,750
Acreage cropped under irrigation, season 1921		21,090
Value of irrigated crops, season 1921		$290,380
Value of irrigated crops per acre cropped		$13.75
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$703,500.72	
Encumbrances, disbursements, and liabilities	119,866.33	
Unencumbered balance July 1, 1922		$586,634.39
Fiscal year 1923, amount specified in appropriation act		345,000.00

		Fiscal year 1922.	To June 30, 1922.
Irrigation works:			
Net construction cost		$103,490.41	$4,037,839.78
Less water-right contracts, project lands	13,048.05 acres	2,712.00	427,697.84
Balance		100,778.41	3,610,141.94

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$17,510.77	$177,667.60	$11,928.77	$185,847.00
Less:				
Charges billed or contracted	26,717.77	149,482.86	26,717.77	149,482.86
Penalties and discounts (net)	* 201.13	* 1,156.01	* 10.83	* 1,222.26
Total	26,516.64	148,326.85	26,706.94	148,260.60
Balance	* 9,005.87	29,340.75	* 14,778.17	37,586.40

* Contra.

Summary of data for Sun River project to end of fiscal year 1922—Continued.

	Reclamation fund.	Court of Claims.	Increase of compensation.	Totals.
Investment to date:				
Disbursements and net transfers	$4,340,380.64	$1,585.35	$57,603.52	$4,399,569.51
Less collections	402,418.37			402,418.37
Net investment	3,937,962.27	1,585.35	57,603.52	3,997,151.14

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected June 30, 1922.
To return net construction cost:						
Water-right charges	$11,746.44	$148,793.34	$5,942.24	$135,863.49		$12,929.85
Construction water-right charges paid in advance				29,418.41		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands, (13,048.05 acres)	26,717.77	149,482.86	8,312.61	114,683.51	$2,679.07	32,120.28
Penalties and interest		1,456.81	247.25	1,456.81		
Total	26,717.77	150,939.67	8,559.86	116,140.32	2,679.07	32,120.28
Operation and maintenance charges paid in advance				10.55		
Revenues:						
Rentals of irrigating water	22,102.45	34,887.86	5,861.44	12,665.30	140.75	22,081.81
Rentals of grazing and farming lands	2,543.08	28,116.55	4,586.78	23,355.00		4,761.55
Total	24,645.53	63,004.41	10,448.22	36,020.30	140.75	26,843.36
Miscellaneous uncollected						416.36
Other miscellaneous collections			1,842.89	84,965.30		
Grand total collections			26,793.21	402,418.37		

ACTIVITIES DURING FISCAL YEAR.

The principal construction work during the fiscal year 1922 consisted of completing the lateral system for the Big Coulee division, which provides for irrigating 2,300 acres, and of beginning the lateral system for the second part of Greenfields division. About 17 miles of laterals had been excavated and contracts had been awarded for the completion of the laterals and structures to irrigate about 12,000 acres. On the Fort Shaw division, lateral D was extended 3.4 miles to reach about 115 acres of land included in existing farm units.

Precipitation for the calendar year 1921 was below normal and during the season 1921 about 12,200 acre-feet of stored water were drawn from Willow Creek Reservoir for irrigation use. The run-off from Willow Creek was not sufficient to replace all this water and the storage on June 30, 1922, was 13,355 acre-feet. Precipitation during the first half of 1922 was above the average and irrigation was light. Crops were in excellent condition.

Maintenance work consisted of cleaning laterals, replacing worn-out structures on the distribution system, caulking cracks in the concrete

lining of Greenfields Canal, telephone line repairs, and repairing the outlet structure of Willow Creek Reservoir by placing a timber facing against the concrete walls, which had become partially disintegrated through alkali and frost action.

Operation data, Sun River project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	16,322	16,224	14,978	40,057	40,057	40,057
Acreage irrigated	4,717	6,675	7,569	11,496	14,780	21,750
Miles of canal operated	100	100	96	244	250	267
Water diverted (acre-feet)	17,841	25,481	30,087	42,863	75,595	88,258
Water delivered to land (acre-feet)	5,757	9,091	11,193	24,080	21,653	30,300
Per acre of land irrigated (acre-feet)	1.22	1.36	1.48	1.9	1.47	1.39

Settlement data, Fort Shaw and Greenfields divisions, Sun River project.

Item.	1916	1917	1918	1919	1920	1921
Total number of farms on project	265	254	239	212	500	500
Population	436	476	508	542	1,000	1,000
Number of irrigable farms	158	176	187	201	354	387
Operated by owners or managers	103	120	118	151	264	290
Operated by tenants	55	56	69	50	90	97
Population	436	476	508	542	861	949
Number of towns	8	8	8	8	8	4
Population	179	168	158	155	685	378
Total population in towns and on farms	615	644	666	697	1,685	1,378
Number of public schools	4	4	4	4	17	17
Number of churches	3	4	4	4	11	11
Number of banks	1	1	1	1	[1] 5	3
Total capital stock	$20,000	$20,000	$20,000	$20,000	[1] $110,000	$65,000
Amount of deposits	$85,000	$95,000	$98,000	$110,000	[1] $391,121	$150,000
Number of depositors	290	310	390	460	[1] 1,278	780

[1] Applies to whole project rather than to the two divisions named.

MONTANA-NORTH DAKOTA, LOWER YELLOWSTONE PROJECT.

L. H. MITCHELL, project manager, Savage, Mont.

The Lower Yellowstone project is located on the west side of the Yellowstone River in eastern Montana and western North Dakota. The source of water supply is the Yellowstone River, diversion from which into the main canal is at a point 18 miles below Glendive. Irrigation works have been constructed since 1909 to deliver water to about 40,000 acres. Water will be available for the entire irrigable area beginning with 1923. The length of the irrigation season depends upon the amount of precipitation in the spring. May 1 to October 10, 163 days, is the maximum length of water deliveries. The average elevation is 1,900 feet above sea level and the project is free from humidity and not too high for frosts early in the fall or late in the spring. Since 1905 the average annual rainfall has been a little less than 15 inches; the average of the highest temperature is 103° F. and the average of the lowest is −35° F. Some alkali and gumbo are found in scattering low tracts, but the project as a whole has a deep sandy loam soil. As the irrigable area of the project is a long and narrow tract of land with cross-drainage creeks at intervals of 3 to 6 miles, seepage has not been serious. The duty of water is about 1.5 acre-feet per acre. The principal crops raised are alfalfa, grain, sugar beets, potatoes, and corn. Billings, Mont., is the market for sugar beets; Duluth and Minneapolis, Minn., for grain; Chicago and the South for potatoes. Forage crops are consumed locally.

SUMMARY OF DATA FOR LOWER YELLOWSTONE PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		59,529
Public land entered to June 30, 1922	13,984	
Public land withdrawn on June 30, 1922	2,412	
State land unsold on June 30, 1922	986	
Railroad land unsold on June 30, 1922	97	
Other private land, June 30, 1922	42,050	
Acreage service could supply, season of 1921		40,344
Acreage irrigated, season of 1921		19,980
Acreage cropped under irrigation, season of 1921		19,980
Acreage dry-farmed, season of 1921		9,677
Value of irrigated crops, season of 1921		$304,220.00
Value of irrigated crops per acre cropped		$15.23
Value of dry-farmed crops, season of 1921		$80,604.25
Value of dry-farmed crops per acre cropped		$8.23
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$360,958.79	
Encumbrances; disbursements and liabilities	261,123.78	
Unencumbered balance July 1, 1922		$99,835.10
Fiscal year 1923, amount specified in appropriation act		180,000.00

	Fiscal year, 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	[1] $694,425.17	$3,566,405.65
Less water-right contracts, project lands (58,248.11 acres)		3,614,104.21
Balance	694,425.17	*47,698.56

	Calendar year, 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	*$467,914.14	$291,955.27	32,065.01	180,804.78
Less—				
Charges billed or contracted	32,416.43	293,523.13	*9,757.71	162,263 69
Penalties and discounts (net)	*2.04	*2.04		*2.04
Total	32,414.39	293,521.09	*9,757.71	162,261.65
Balance	*500,328.53	*1,565.82	41,822.72	18,543.13

[1] Due to operation and maintenance charges added to construction, $522,500.05.
* Contra.

NOTE.—Operation and maintenance account adjusted during the calendar year 1921 by the transfer of $522,500.05 cost to construction.

Summary of data for Lower Yellowstone project to end of fiscal year 1922—Continued.

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$3,888,031.68	$12,835.88	$24,738.75	$3,925,606.31
Less collections	279,052.71			279,052.71
Net investment	3,608,978.97	12,835.88	24,738.75	3,646,553.60

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected June 30, 1922.
To return net construction cost:						
Water-right charges		$41,135.10		$41,135.10		
Construction water-right charges paid in advance				197.60		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (37,195.87 acres)		144,170.56	$8,542.42	45,334.83	$4.63	$98,831.10
Penalties and interest		2.59		2.59		
Total		144,173.15	8,542.42	45,337.42	4.63	98,831.10
Operation and maintenance charges paid in advance				101.00		
Revenues:						
Rentals of irrigating water	$112.16	122,023.08	669.11	119,468.25		2,554.83
Rentals of grazing and farming lands	332.74	2,701.37	223.74	2,668.37		33.00
Total	444.90	124,724.45	892.85	122,136.62		2,587.83
Miscellaneous uncollected						901.34
Other miscellaneous collections			2,852.42	70,144.97		
Grand total collections			12,287.69	279,052.71		

ACTIVITIES DURING FISCAL YEAR.

Construction of the Thomas Point pumping plant began on March 12, 1922, by Government forces and was completed about the end of July. The earthwork on the main canal and laterals, involving about 532,500 cubic yards of excavation, will be completed early in the fall of 1922. Construction of structures on the main canal and lateral extensions, involving the placing of 150,000 feet b. m. of lumber, erecting 450 linear feet of metal flume, placing 36,000 pounds of reinforcing steel, 680 cubic yards of reinforced concrete, 600 linear feet of clay and metal pipe, and the necessary excavation and back filling for structures, will be completed about October 31, 1922. Turnouts for farms ready for water under canal and lateral extensions will be constructed by Government forces as needed. Nearly all drops have been replaced with reinforced concrete structures and the turnouts have been replaced with the same type of structure.

During the last two seasons the principal items of expense in maintaining the works have been keeping the laterals cleaned of silt and raising the unstable banks of the main canal below the Thomas Point pumping plant. Prior to 1921 endeavor was made to keep the laterals cleaned with slip teams. This was slow and expensive. In June, 1921, a Ruth ditch-cleaning machine was purchased, and during the remainder of the season 22.2 miles of laterals were cleaned; 36,476 cubic yards of material were moved at unit cost of 0.073 cents per cubic yard.

Operation data, Lower Yellowstone project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	42,288	42,288	42,232	42,167	[1] 40,200	[1] 40,344
Acreage irrigated	6,020	15,744	21,075	21,300	19,120	19,980
Miles of canal operated	151	180	186	188	187	174
Water diverted (acre-feet)	27,181	60,205	51,445	70,029	47,375	64,972
Water delivered to land (acre-feet)	7,545	27,842	23,321	26,252	16,633	25,733
Per acre of land irrigated (acre-feet)	1.25	1.77	1.11	1.23	.87	1.28

[1] District lands only.

Settlement data, Lower Yellowstone project.

Item.	[1] 1918	[1] 1919	[2] 1920	[2] 1921
Total number of irrigable farms on the project	514	514	543	572
Population	1,120	1,284	1,368	1,390
Number of irrigated farms	370	405	375	370
Irrigable farms operated by owners	200	204	226	178
Irrigable farms operated by tenants	75	85	94	117
Irrigable farms having neither owner nor tenant living thereon	165	166	172	277
Number of towns	8	8	8	8
Population	3,500	3,900	2,850	2,805
Total population in towns and on farms	4,620	5,184	[3] 4,218	4,195
Number of public schools	19	[4] 12	[4] 12	[4] 12
Number of churches	8	13	15	15
Number of banks	10	10	10	[5] 9
Total capital stock	$330,000	$330,000	$330,000	$335,000
Amount of deposits	$2,000,000	$2,365,000	$2,331,000	$1,851,000
Number of depositors	7,000	7,500	6,500	4,726

[1] Project on rental basis.
[2] Project operated under contracts with irrigation districts
[3] Part of decrease due to exact census.
[4] Decrease in number of schools due to consolidation.
[5] Decrease in number of banks due to consolidation

NEBRASKA-WYOMING, NORTH PLATTE PROJECT.

ANDREW WEISS, project manager, Mitchell, Nebr.

The North Platte project is situated in western Nebraska and eastern Wyoming. The source of water supply is the North Platte River. The irrigation plan provides for storage of flood waters of the river in Pathfinder Reservoir, located about 50 miles southwest of Casper, Wyo., and in smaller reservoirs along the canal lines, and diversion from the North Platte River by a dam near Whalen, Wyo., into the Interstate Canal, supplying water for lands on the north side of the river, and into the Fort Laramie Canal watering lands on the south side. The Northport division on the north side in the vicinity of Northport, Nebr., will be watered from an extension of the Tri-State Canal. The limit of area of farm units on all divisions is 80 acres for public and 160 acres for private land. The railroads serving the project cities and towns, which have an estimated population of 29,900, are the Chicago, Burlington & Quincy and Union Pacific. The character of the soil varies from sandy loam on the major portion of the Interstate and Northport divisions to gumbo soil on portions of the Fort Laramie division. The principal products are alfalfa, cereals, corn, sugar beets, and potatoes, and the principal markets are Omaha, Nebr., Kansas City and St. Joseph, Mo., Denver, Colo., and central Wyoming. The length of the irrigating season is from April 1 to September 30 and the average rainfall amounts to 14.74 inches. The average temperature ranges between 98° maximum and −24° F. minimum.

SUMMARY OF DATA FOR NORTH PLATTE PROJECT TO END OF FISCAL YEAR 1922.

	Interstate.	Fort Laramie.	Northport.	Total.
Areas and crops:				
Irrigable acreage when project is complete	130,545	107,000	15,000	252,545
Public land entered to June 30, 1922	83,681	44,689	6,500	134,872
Public land withdrawn on June 30, 1922	411	15,511	500	16,424
State land unsold on June 30, 1922	529	7,325	1,400	9,250
Private land, June 30, 1922	45,924	39,475	6,600	91,999
Acreage service could supply, season of 1921	129,666	16,232	2,250	148,148
Acreage irrigated, season of 1921	97,400	12,150	2,250	111,800
Acreage cropped under irrigation, season of 1921	96,470	12,140	1,800	110,410
Value of irrigated crops, season of 1921	$2,737,900	$188,930.00	$35,900.00	$2,962,730
Value of irrigated crops, per acre cropped	$28.38	$15.56	$20.00	$26.83

Finances:	
Appropriations—	
Fiscal year 1922, all congressional authorizations	$2,273,647.31
Encumbrances, disbursements, and liabilities	1,338,063.75
Unencumbered balance July 1, 1922	$935,583.56
Fiscal year 1923, amount specified in appropriation act	1,440,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$1,294,760.21	$12,962,329.94
Less:		
Funds advanced and unapplied cooperative credits	1,579.91	1,579.91
Water-right contracts:		
Project lands (108,373.46 acres)	1,821,400.86	7,828,562.86
Warren Act lands (125,873 acres)		1,019,663.88
Total	1,822,980.77	8,849,806.65
Balance	*528,220.56	4,112,523.29

* Contra.

Summary of data for North Platte project to end of fiscal year 1922—Continued.

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$262,096.95	$1,430,661.96	$181,343.78	$1,525,951.14
Less:				
Charges billed or contracted	189,649.54	1,570,779.46	204,369.89	1,589,206.38
Penalties and discounts (net)	*11,628.66	*10,881.26	718.58	*10,781.04
Total	178,020.88	1,559,898.20	205,088.47	1,578,425.34
Balance	84,076.07	*129,236.24	*23,744.69	*52,474.20

	Reclamation fund.	Judgments Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$15,016,436.20	$26,425.67	$292,558.74	$15,335,420.61
Less collections	3,322,073.03			3,322,073.03
Net investment	11,694,363.17	26,425.67	292,558.74	12,013,347.58

*Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	
To return net construction cost:						
Funds advanced and unapplied cooperative credits	$1,579.91	$1,579.91	$1,579.91	$1,579.91		
Water-right charges	357,271.81	1,980,103.51	190,767.69	1,532,660.75	$33,816.79	$413,625.97
Total	358,851.72	1,981,683.42	192,347.60	1,534,240.66	33,816.79	413,625.97
Construction water-right charges paid in advance				1,112.91		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (107,000 acres)	185,037.37	1,408,123.83	83,744.67	1,066,134.56	39,211.25	302,778.02
Warren Act lands (approximately 120,000 acres)	19,332.52	181,082.55	4,401.56	147,603.66	12.23	33,466.66
Penalties and interest	3,328.03	19,197.66	3,328.03	19,068.62	129.04	
Total	207,697.92	1,608,404.04	91,474.26	1,232,806.84	39,352.52	336,244.68
Operation and maintenance charges paid in advance				207.73		
Revenues:						
Rentals of irrigating water	51,684.52	159,957.73	56,276.05	158,464.49	2.00	1,491.24
Rentals of power and light	27,407.19	54,673.46	24,410.02	41,554.85	10,907.55	2,211.06
Rentals of grazing and farming lands	9,683.36	70,762.53	9,779.45	65,797.40		4,965.13
Total	88,775.07	285,393.72	90,465.52	265,816.74	10,909.55	8,667.43
Miscellaneous uncollected						58,360.49
Other miscellaneous collections			41,988.29	287,888.15		
Grand total collections			416,275.67	3,322,073.03		

CONSTRUCTION DURING FISCAL YEAR.

Storage division.—The construction of the north tunnel outlet works, Pathfinder Dam, was completed during June, 1922. The work involved the rock excavation for and concrete lining of the outlet tunnel and construction of the valve house; the installation of two 58-inch balanced needle valves; 5 by 5 foot emergency gate; 3 by 5 foot sluice gate; and the erection of a sluice-gate house at the head of shaft No. 2.

Fort Laramie division.—The excavation of the Fort Laramie Canal continued by drag-line excavators throughout the year, all work in Wyoming being completed October 31, 1921. The three electric machines on this work completed 19.35 miles of canal during the year, handling 1,318,534 cubic yards of material at an average field cost of $0.095 per cubic yard. During the year 7,070 acres of land in Upper Cherry Creek Valley and 19,550 acres of land, which comprises the entire Springer lateral system, were made ready for irrigation with the completion of the above work; all land lying west of Horse Creek in Wyoming is ready for irrigation. Thirty-two miles of laterals, involving the excavation of 162,870 cubic yards of material, and 2,123 structures having a concrete yardage of 7,882 were completed. Work was started on the Horse Creek system the latter part of May, 1922.

Northport division.—Fourteen miles of the Northport Canal, involving the excavation of 742,000 cubic yards of material by drag lines and teams, were completed. Fifty miles of laterals with a yardage of 172,000 and 703 lateral structures having a concrete yardage of 3,400 were constructed. The above work makes ready 4,675 acres for irrigation during the season of 1922.

Drainage.—On the Interstate division 5.55 miles of outlet drain were built. The total drag-line excavation amounted to 149,200 cubic yards. The work consisted of the construction of a structure carrying the Minatare drain under the Nine Mile drain and the excavation incidental to the fulfillment of the obligations on the part of the United States under the Nine Mile contract. A start was made on the construction of the Spottedtail Outlet Channel, which eventually will serve as an outlet to the Dutch Flats area.

On the Fort Laramie division 5.2 miles of drain involving the excavation of 105,878 cubic yards of material were finished. This completes the construction of the Cherry Creek drainage system, which will drain all land in the Cherry Creek Basin. On the Katzer drain 6.9 miles of drain were constructed involving 308,015 cubic yards of material. When completed this drain will serve as an outlet for all seepage waters developing from lands under the Springer lateral system draining into the Katzer Basin.

OPERATION AND MAINTENANCE.

Interstate division.—Betterments were continued on the Interstate Canal, reinforcing banks between miles 35.8 and 42.3, and widening the canal between miles 38.2 and 40.0, and between miles 13.0 and 13.6. Structure replacement continued on all lateral districts, 680 wooden structures being replaced during the year.

Fort Laramie division.—The canal was operated the entire year to serve the Lingle power plant. During the irrigation season the

canal discharge averaged 300 second-feet, and during the winter months the effective head averaged about 50 second-feet. One drag line was engaged in the removal of silt and sand from the upper reaches of the Fort Laramie Canal.

Operation data, Interstate division, North Platte project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	[1] 129,891	[1] 129,891	[1] 129,778	[1] 129,715	[1] 129,629	[1] 129,666
Acreage irrigated	[1] 84,208	[1] 92,553	[1] 97,908	[1] 99,418	[1] 97,640	[1] 97,400
Miles of canal operated	800	805	805	805	807	809
Water delivered to land (acre-feet)	[2] 164,240	[2] 177,472	[2] 204,819	[2] 201,505	[2] 175,153	[2] 186,328
Per acre of land irrigated (acre-feet)	[2] 2.17	[2] 2.13	[2] 2.31	[2] 2.27	[2] 1.99	[2] 2.14

[1] Includes North Platte Canal & Colonization Co. lands.
[2] Exclusive of lands under North Platte Canal & Colonization Co. tract.

Operation data, Fort Laramie division, North Platte project, by calendar years.

Item.	1918	1919	1920	1921
Acreage for which service was prepared to supply water	12,132	12,132	16,232	16,232
Acreage irrigated	4,865	6,258	8,530	12,150
Miles of canal operated	70	79	130	138
Water delivered to the land (acre-feet)	5,037	18,050	16,755	22,665
Per acre of land irrigated (acre-feet)	1.04	2.89	1.97	1.85

Operation data, Northport division, North Platte project.

Item.	1920	1921
Acreage for which service was prepared to supply water	1,600	2,220
Acreage irrigated	1,220	2,250
Water delivered to the land (acre-feet)	1,526	3,864
Per acre of land irrigated (acre-feet)	1.27	1.75

SETTLEMENT.

All of the land thrown open to entry in September, 1921, has been filed upon and the majority of the entrymen have built substantial homes and are making other improvements incidental to successful farming under irrigation.

The development of the Fort Laramie division has been enhanced greatly by the construction of the Union Pacific Railroad through the central portion of this division, and the construction of a spur tapping Cherry Creek Valley. As a result five towns have been started. Bailey and Lyman in Nebraska, and Huntley, Yoder, and Veteran, the latter a Government town site, in Wyoming.

Settlement data, Interstate division, North Platte project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	1,406	1,406	1,420	1,410	1,450
Population	4,500	4,500	4,500	5,000	5,700
Number of irrigated farms	1,274	1,274	1,310	1,300	1,340
Operated by owners or managers	810	774	860	800	710
Operated by tenants	464	500	450	500	630
Population	4,056	4,200	4,056	4,746	5,200
Number of towns	7	8	8	9	9
Population	8,000	11,000	11,610	14,382	14,400
Total population in towns and on farms	12,500	15,500	16,110	19,382	20,100
Number of public schools	40	40	40	40	40
Number of churches	25	25	25	26	26
Number of banks	16	16	21	21	27
Total capital stock	$352,000	$352,000	$462,000	$777,500	$787,500
Amount of deposits	$2,400,000	$2,600,000	$3,100,000	$7,371,100	$6,834,400
Number of depositors	7,000	7,200	7,500	12,000	11,200

Settlement data, Fort Laramie division, North Platte project.

Item.	1921	Item.	1921
Total number of farms on project	407	Total population in towns and on farms	4,400
Population	1,500	Number of public schools	10
Number of irrigated farms	190	Number of churches	1
Operated by owners or managers	105	Number of banks	[1] 8
Operated by tenants	85	Total capital stock	[2] $185,000
Population	433	Amount of deposits	[3] $1,039,600
Number of towns	3	Number of depositors	5,500
Population	2,900		

[1] Lands on the Interstate and Fort Laramie divisions are tributary to 6 of the banks listed above.
[2] $155,000 of this amount is listed under similar caption on Interstate division.
[3] $919,600 of this amount is listed under similar caption on Interstate division.

NEVADA, NEWLANDS PROJECT.

JOHN F. RICHARDSON, project manager, Fallon, Nev.

The Newlands project is located on the Southern Pacific railroad in Churchill, Storey, and Lyon Counties, Nev. The water supply is from the Truckee and Carson Rivers. The average rainfall on the irrigable area, which is at an elevation of about 4,000 feet above sea level, is 4.43 inches. The principal crops are alfalfa, grain, potatoes, melons, and dairy products. Farm units range in size from 40 to 160 acres.

SUMMARY OF DATA FOR NEWLANDS PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		159,000
Public land entered to June 30, 1922	29,438	
Public land open to entry on June 30, 1922	3,253	
Public land withdrawn on June 30, 1922	29,432	
Indian land, June 30, 1922	23,877	
Railroad land unsold on June 30, 1922	20,000	
Other private land, June 30, 1922	53,000	
Acreage service could supply, season of 1921		72,166
Acreage irrigated, season of 1921		46,160
Acreage cropped under irrigation, season of 1921		43,440
Value of irrigated crops, season of 1921		$1,254,580.00
Value of irrigated crops per acre cropped		$28.88
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$1,532,785.57	
Encumbrances, disbursements, and liabilities	400,796.25	
Unencumbered balance July 1, 1922		$1,131,989.32
Fiscal year 1923, amount specified in appropriation act		915,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$191,848.04	$6,691,414.52
Less water-right contracts, project lands (49,896 acres)	669,642.48	2,692,614.01
Balance	*477,794.44	3,998,800.51

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$106,501.12	$856,625.54	101,781.75	925,716.91
Less:				
Charges billed or contracted	122,635.69	687,625.63	217,966.89	782,872.63
Penalties and discounts (net)	*1,613.22	*4,916.63	*746.73	*6,001.47
Total	121,022.47	682,709.00	217,220.16	776,871.16
Balance	*14,521.35	173,916.54	*115,438.41	148,845.75

NOTE.—Operation and maintenance charges billed or contracted for fiscal year 1922 and to June 30, 1922, include item of $95,500, representing amount of operation and maintenance deficit covered by contract dated May 25, 1922, with Truckee-Carson irrigation district.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$8,049,792.98	$69,264.93	$8,119,057.91
Less collections	1,439,828.71		1,439,828.71
Net investment	6,609,964.27	69,264.93	6,679,229.20

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected June 30, 1922.
To return net construction cost:						
Water-right charges	$40,181.40	$506,570.37	$31,162.50	$482,654.41	$5,447.40	$18,468.56
Construction water-right charges paid in advance				876.27		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (70,041 acres)	122,606.54	687,372.63	88,016.71	591,240.83	19,540.97	76,590.83
Penalties and interest	691.30	7,297.69	654.79	7,261.18	36.51	
Total	123,297.84	694,670.32	88,671.50	598,502.01	19,577.48	76,590.83
Operation and maintenance charges paid in advance				104.96		
Revenues:						
Rentals of irrigating water	1,885.10	15,653.27	1,800.35	15,568.52		84.75
Rentals of power and light	21,945.34	161,134.37	21,827.07	134,183.78	25,487.75	1,462.84
Rentals of grazing and farming lands	373.50	24,052.29	335.10	24,013.89		38.40
Total	24,203.94	200,839.93	23,962.52	173,766.19	25,487.75	1,585.99
Miscellaneous uncollected						1,068.13
Other miscellaneous collections			9,623.28	183,924.87		
Grand total collections			153,419.80	1,439,828.71		

ACTIVITIES DURING FISCAL YEAR.

About 4.9 miles of laterals involving approximately 33,850 cubic yards of earthwork, were constructed largely under contract.

The lower bank of the Truckee Canal was reinforced between stations 561 and 1098 and rock slides were removed from the upper sections of this canal, using drag-line excavators.

A new timber-steel check structure was placed in the Truckee Canal below the head of the KE lateral. The Southern Pacific Co., under the terms of a special contract, installed a concrete-cast iron siphon in the Lisle lateral under the railroad near Fernley, Nev.

Numerous minor timber structures were installed in laterals by Government forces.

Drainage.—Excavation of deep open drains under the contract with the Truckee Carson irrigation district was commenced on August 11, 1921. Seven drag-line excavators were in operation on this work at the end of the fiscal year, during which period 46.3 miles of drain, involving the removal of 1,711,857 cubic yards of material, were completed, together with necessary structures.

Several conferences were held during the year between officials of the Reclamation Service and the Canyon Power Co. for the settlement of conflicting interests on the Truckee River preliminary to the commencement of work on the Spanish Springs Reservoir.

Operation and maintenance.—Commencing during July, 1921, and continuing through August, the lack of stored water in Lake Tahoe and shortage in the Truckee River made it necessary to rotate between laterals and water users to satisfy irrigation requirements in the Truckee district.

An important feature of the maintenance work consisted of relining with reinforced concrete the Gilpin wasteway tunnel, 120 feet in length, out of the Truckee Canal. The failure of the original concrete lining made this work necessary. Temporary lining of portions of the Truckee Canal tunnels Nos. 1 and 3 was also necessary to insure their safety.

A large part of the maintenance work on laterals was done under cleaning contracts during the early part of 1922. Advertisements were issued and bids received covering about 42 miles of laterals, divided between 25 schedules of work. Unit bids on contracts awarded ranged from $1.50 to $11 per station of 100 feet.

On May 22, 1922, Lahontan Reservoir was filled and water flowed over the spillways at elevation 4162 for the first time.

The Lahontan power plant was operated during the entire year under lease by the Canyon Power Co.

Operation data, Newlands project, by calendar years.

Item.	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	70,915	71,817	65,809	69,310	72,166
Acreage irrigated	40,392	42,311	44,324	45,610	46,160
Miles of canal operated	355	356	365	389	393
Water diverted (acre-feet)	263,433	266,927	317,424	295,225	314,241
Water delivered to land (acre-feet)	125,375	126,545	134,015	129,814	132,788
Per acre of land irrigated (acre-feet)	3.05	2.99	3.02	2.85	2.87

Settlement data, Newlands project.

Item.	1917	1918	1919	1920	1921
Number of farms on project	600	610	675	785	870
Population	2,197	2,268	2,386	2,523	2,652
Number of irrigated farms	600	648	694	742	788
Operated by owners or managers	525	568	619	677	708
Operated by tenants	75	80	75	65	80
Population	2,197	2,268	2,386	2,523	2,652
Number of towns	5	5	5	5	5
Population	1,860	1,900	2,240	2,830	2,500
Total population, towns and on farms	4,057	4,168	4,626	5,353	5,152
Number of public schools	16	14	[1] 11	12	11
Number of churches	7	7	7	8	8
Number of banks	2	2	2	2	1
Capital stock	$116,000	$116,000	$150,000	$115,900	$75,000
Amount of deposits	$371,240	$632,000	$790,000	$864,360	$677,104
Number of depositors	775	1,214	1,860	2,500	2,000

[1] Fallon district schools consolidated in 1919.

NEW MEXICO, CARLSBAD PROJECT.

L. E. Foster, project manager, Carlsbad, N. Mex.

The Carlsbad project is located in Eddy County, N. Mex., on the Santa Fe Railway system. Project cities and towns are Carlsbad, population 3,000, and Otis, Loving, and Malaga, with a combined population of about 375. The source of water supply is Pecos River. The length of the irrigation season is 260 days, which includes two weeks in winter. The average elevation of the irrigable area is 3,100 feet. The rainfall averages 14.25 inches. The average of recorded temperatures for a period of 21 years ranges from 112° to —7° F. The soil of the irrigable area is Pecos clay and sandy loam, with high lime content. The principal products are cotton, alfalfa, and miscellaneous grains and fruits. The principal markets are Carlsbad, Kansas City, Chicago, New Orleans, and Galveston. The irrigation plan provides for the storage of water in Lake McMillan and in Avalon reservoir both controlled by earth and rock-fill dams. Water is diverted at Avalon reservoir into a canal system, which extends 25 miles in a southerly direction.

SUMMARY OF DATA FOR CARLSBAD PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		24,991
Public land entered to June 30, 1922	55	
Other private land, June 30, 1922	24,936	
Acreage service could supply, season of 1921		24,991
Acreage irrigated, season of 1921		23,810
Acreage cropped under irrigation, season of 1921		21,620
Value of irrigated crops, season of 1921		$919,650.00
Value of irrigated crops per acre cropped		$42.53
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$110,474.48	
Encumbrances, disbursements and liabilities	53,096.42	
Unencumbered balance July 1, 1922		$57,378.06
Fiscal year 1923, amount specified in appropriation act		65,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	*$1,507.33	$1,397,303.65
Less—		
Funds advanced and unapplied cooperative credits		7,980.06
Water-right contracts, project lands (24,859 acres)		1,409,501.00
Total		1,417,481.06
Balance	*1,507.33	*20,177.41

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$45,452.10	$405,103.30	49,834.89	438,404.30
Less:				
Charges billed or contracted	58,059.30	394,179.14	57,768.57	393,888.41
Penalties and discounts (net)	231.84	2,590.29	1,215.59	3,229.63
Total	58,291.14	396,769.43	58,984.16	397,118.04
Balance	*12,839.04	8,333.87	*9,149.27	41,286.26

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$1,892,857.45	$24,180.76	$1,917,038.21
Less collections	746,006.38		746,006.38
Net investment	1,146,851.07	24,180.76	1,171,031.83

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected, June 30, 1922.
To return net construction cost:						
Funds advanced		$7,980.06		$7,980.06		
Water-right charges	$55,428.29	364,388.81	$49,562.71	322,510.08		$41,878.73
Total	55,428.29	372,368.87	49,562.71	330,490.14		41,878.73
Construction water-right charges paid in advance				856.22		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (24,859 acres)	57,768.57	393,888.41	36,572.36	323,281.69	$5,086.81	65,519.91
Penalties and interest	1,946.16	8,316.44	1,946.16	8,316.44		
Total	59,714.73	402,204.85	38,518.52	331,598.13	5,086.81	65,519.91
Revenues:						
Rentals of irrigating water	1,473.70	18,858.44	1,473.70	18,858.44		
Rentals of grazing and farming lands	1,749.16	10,042.04	1,674.78	9,747.70		294.34
Total	3,222.86	28,900.48	3,148.48	28,606.14		294.34
Miscellaneous uncollected						152.94
Other miscellaneous collections			6,929.23	54,455.75		
Grand total collections			98,158.94	746,006.38		

ACTIVITIES DURING FISCAL YEAR.

Operation and maintenance.—The water supply was ample during the period. During the early part of the year considerable water was wasted; however, during the fall months of 1921 the storage was nearly exhausted and the reservoir was not entirely filled prior to the opening of the irrigation season of 1922, nor had it filled by the close of the fiscal year. There was no water shortage during the year. The spring of 1922 was somewhat late and heavy rains in April and May resulted in an unusual amount of replanting of row crops. Crops generally were in good condition at the close of the fiscal year. Minor damage was done to the concrete section of Black River Canal in July, 1921, and again in May, 1922. Repairs were made promptly without delaying water delivery. The canal and lateral system was thoroughly cleaned during the winter of 1922, and the wooden parts of all lateral structures were repaired or replaced.

In the case of the Pecos water-right adjudication, some progress was made during the year through interlocutory decrees entered by consent settling tentatively the rights of certain defendants. The hydrographic survey being made by the State engineer has not yet been completed. This work was somewhat delayed by lack of available funds. The Reclamation Service had advanced $12,000 for this work up to the close of the fiscal year.

Operation data, Carlsbad project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	24,775	24,775	24,775	24,991	24,991	24,991
Acreage irrigated	16,600	16,882	19,460	20,363	22,170	23,810
Miles of canal operated	45	45	45	45	45	45
Water diverted (acre-feet)	105,470	95,196	97,320	114,050	131,673	137,500
Water delivered to land (acre-feet)	40,382	39,589	47,380	48,933	53,644	59,371
Per acre of land irrigated (acre-feet)	2.43	2.33	2.43	2.4	2.42	2.49

Settlement data, Carlsbad project.

Item.	1916	1917	1918	1919	1920	1921
Total number of farms on project	[1] 595	[1] 627	[1] 660	[1] 741	[1] 770	[1] 769
Population	634	992	1,257	1,378	1,575	1,435
Number of irrigated farms	455	535	458	565	363	426
Operated by owners or managers	[2] 167	[2] 190	[2] 231	[2] 298	[2] 189	[2] 277
Operated by tenants	83	243	227	267	267	149
Population	634	992	1,257	1,378	1,575	1,435
Number of towns	4	4	4	4	4	4
Population	3,300	3,300	3,375	3,375	3,375	3,375
Total population in towns and on farms	3,934	4,292	4,632	4,753	4,950	4,810
Number of public schools	7	7	7	7	13	13
Number of churches	8	8	8	8	11	11
Number of banks	3	3	3	3	5	3
Total capital stock	$225,000	$275,000	$275,000	$275,000	$275,000	$225,000
Amount of deposits	$1,243,316	$1,271,266	$1,238,432	$1,271,645	$1,049,924	$1,176,441
Number of depositors	2,138	1,941	2,234	2,611	2,617	2,350

[1] Water-right applications.
[2] Many farms were operated by one man.

NEW MEXICO-TEXAS, RIO GRANDE PROJECT.

L. M. LAWSON, project manager, El Paso, Tex.

The Rio Grande irrigation project is an international and an interstate project, including within its present established boundaries approximately 86,000 acres of land in the Elephant Butte irrigation district of New Mexico and 64,000 acres in the El Paso County Water Improvement District No. 1, of Texas, and approximately 25,000 acres in the Republic of Mexico. The population of the principal city, El Paso, Tex., is 80,000, and the project lands have an additional population of 14,000.

Flood waters of the Rio Grande are stored in the Elephant Butte Reservoir. With an average rainfall of 10 inches the use of water for irrigation in addition is approximately 3 acre-feet per acre. The irrigation season normally is from February 1 to October 15. Practically all the lands of the project are in private ownership. All lands within the project limits in the United States are in irrigation districts, and contracts for repayment of construction charges, as well as yearly operation and maintenance cost, have been negotiated and executed between these districts and the United States.

The project is divided into four divisions, namely, the Rincon, Leasburg, Mesilla, and El Paso. Each of these divisions is furnished water supply by diversion from the Rio Grande. The last-named division utilizes an international diversion dam located near El Paso, and this structure, maintained jointly by the irrigators of both countries, also diverts the water into the main canal for the Mexican lands.

It is estimated that the construction and reconstruction of the lateral system was 60 per cent complete on June 30, 1922. The drainage system, now under construction, when completed will consist of 350 miles of deep open drain, involving excavation of 17,000,000 cubic yards. On June 30, 1922, 244.5 miles of main drain planned had been completed.

Power development at Elephant Butte Dam consists of a small plant required for the operation of the water system and furnishing of lights. At the time of the construction of the dam six power gates and penstocks were incorporated in the structure, and it is estimated that a power plant with an output of 18,000 killowatts could be constructed at some future date.

SUMMARY OF DATA FOR RIO GRANDE PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		150,000
Public land entered to June 30, 1922	600	
Public land open to entry on June 30, 1922	1,000	
Public land withdrawn on June 30, 1922	700	
State land unsold on June 30, 1922	1,000	
Private land, June 30, 1922	146,700	
Acreage service could supply, season of 1921		109,000
Acreage irrigated, season of 1921		[1] 85,580
Acreage cropped under iirrigation, season of 1921		[1] 77,660
Value of irrigated crops, season of 1921		$2,493,710.00
Value of irrigated crops per acre cropped		$32.11
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$2,009,570.37	
Encumbrances, disbursements, and liabilities	837,170.78	
Unencumbered balance July 1, 1922		$1,172,399.59
Fiscal year 1923, amount specified in appropriation act		1,000,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$794,053.27	$11,315,348.98
Less:		
Nonreimbursable [a]		1,000,000.00
Funds advanced for construction	5,000.00	5,000.00
Water-right contracts, project lands (85,000 acres)		7,650,000.00
Total	5,000.00	8,655,000.00
Balance	789,053.27	2,660,348.98

[1] Includes 1,120 acres in Fort Hancock area, below the project supplied with excess stored water.
[a] 34 Stat., 1357.

Summary of data for Rio Grande project to end of fiscal year 1922—Continued.

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$233,754.42	$233,754.42	$216,372.60	$366,808.52
Less—				
Charges billed or contracted	232,724.10	232,724.10	83,318.50	232,724.10
Penalties and discounts (net)	*2,704.12	*2,704.12	*422.57	*3,109.31
Total	230,019.98	230,019.98	82,895.93	229,614.79
Balance	3,734.44	3,734.44	133,476.67	137,193.73

	Reclamation fund.	Rio Grande Dam.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$12,379,762.25	$1,000,000.00	$363,608.90	$13,743,371.15
Less collections	1,814,727.18			1,814,727.18
Net investment	10,565,035.07	1,000,000.00	363,608.90	11,928,643.97

*Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected, June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Funds advanced for construction	$5,000.00	$5,000.00				$5,000.00
To return net operation and maintenance cost:						
Operation and maintenance charges project lands, 150,000 acres	216,605.50	216,605.50	$142,500.00	$212,119.06	$4,486.44	
Penalties and interest	1,228.11	1,377.13	1,228.11	1,377.13		
Total	217,833.61	217,982.63	143,728.11	213,496.19	4,486.44	
Revenues:						
Rentals of irrigating water	1,575.00	1,090,101.25	57,432.31	1,043,848.57		46,252.68
Rentals of power and light		2,243.33		2,243.33		
Rentals of grazing and farming lands	446.45	1,512.00	446.45	1,504.00		8.00
Total	2,021.45	1,093,856.58	57,878.76	1,047,595.90		46,260.68
Other miscellaneous collections			28,554.20	553,635.09		2,789.64
Miscellaneous uncollected						
Grand total collections			230,161.07	1,814,727.18		

ACTIVITIES DURING FISCAL YEAR.

Storage.—Concreting on the spillway channel at Elephant Butte Dam was begun about July 1, 1921, and was completed in November, 7,785 cubic yards of concrete being placed from a chuting tower. The upper and lower east balanced valve plugs were replaced with new ones having removable bronze downstream face, the original semisteel plugs having become pitted through.

Canal system.—During the nonirrigation season the Leasburg Canal extension was completed following a portion of the Dona Ana lateral and wasteway so that approximately 3 miles of the old Las Cruces and Mesilla ditches were eliminated. Six thousand feet of the West Side Canal were lined above the Chamberino lateral heading and the banks raised for 2 miles. The Franklin Canal was enlarged from the Franklin feeder junction to the Island feeder, which was also enlarged and raised.

Lateral system.—One Ruth ditching machine operated the entire year completing the Las Cruces system including sublaterals and about 60 per cent of the Mesilla system; an additional machine received during the spring completed about 75 per cent of the Three Saints lateral system. Lateral construction by drag-line excavators included 2,000 feet of the Las Cruces lateral moved off the railroad right of way, the extension of the Hill lateral, the Santo Tomas, Brazito, Baca, and River laterals, a portion of the Del Rio lateral, Mesilla wasteway, and a portion of the Brown lateral, a section of the Dona Ana wasteway, and the lower end of the Anthony lateral. Construction under small earthwork contracts consisted of the Cooney, Rowley, Zach, and Stevens laterals and a section of the Taylor, Baker, and La Union East laterals. In the El Paso Valley construction of the lower end of the Salatral lateral and the reconstruction of the Ysla and Y-303 laterals were completed by the P. & H. 206 excavator. The Jornada lateral was reconstructed by Government forces, and a Ruth ditching machine completed the San Elizario lateral.

Drainage system.—In the Mesila Valley the Monighan 2–T drag line worked throughout the year on the Del Rio drain, except during the construction of the Mesilla wasteway. One Bucyrus 9½ drag line completed the Dona Ana drain, worked on the Leasburg Canal extension during the nonirrigation season, constructed the Shalem drain, and resumed the construction of the Selden drain. Another Bucyrus 9½ completed the Santo Tomas drain and Santo Tomas lateral, worked on the West Side Canal bank raising during the nonirrigation season, and began the construction of the Picacho drain on February 1. The two P. & H. 206 drag lines were diverted from lateral construction for short intervals for the construction of the Lake and Shalem spur drains. In all 19.1 miles of drain were constructed in the Mesilla Valley. In the El Paso Valley one Bucyrus 9½ drag line continued the construction of the Border drain and the other 9½ excavator completed the Playa drain and cleaned a portion of the Mesa drain. The Jennings Construction & Engineering Co. completed their contract for the second schedule of the Tornillo drain on March 24 and the construction of this drain was resumed by the Bucyrus 30–B drag line. In the El Paso Valley 13.5 miles of drain were constructed.

Operation and maintenance.—During the year 1921 the Reclamation Service delivered water to 84,450 acres on the project on a rental basis under contract with the two irrigation districts, the districts being billed for the estimated cost of operation and maintenance for the year. Practically all cleaning was done under small earthwork contracts. Portions of the Mesa and Middle drains in the El Paso Valley were cleared by drag line.

Operation data Rio Grande project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	85,000	88,000	92,300	107,000	109,000	109,000
Acreage irrigated	62,513	64,308	64,781	70,000	[1] 73,346	[2] 85,580
Miles canal operated	75	86	153	385	546	586
Water diverted (acre-feet)	[3] 420,646	[3] 622,177	[3] 613,638	[4] 603,711	[4] 677,953	[4] 782,366
Water delivered to land (acre-feet)	.....	.....	[5] 348,295	[5] 174,945	[5] 226,464	[5] 197,086
Per acre of land irrigated (acre-feet)	6.73	8.0	5.37	2.5	2.95	2.55

[1] Land irrigated through Government operated distribution system only does not include approximately 10,000 acres in Picacho, Island, and Tornillo still irrigating from community ditch diverting direct from the river.
[2] Includes 1,120 acres in Fort Hancock.
[3] Measured at point of delivery from canals.
[4] Total diversions, including water wasted and rediverted from river below.
[5] Includes delivery to farms by U. S. Reclamation Service operation and to heads of community ditches on project.

Settlement data, Rio Grande project.

	1917	1918	1919	1920	1921
Total number of farms	1,700	2,287	2,703	3,021	3,204
Population	10,500	10,259	12,890	12,199	11,774
Number of irrigated farms	1,700	2,287	2,703	3,021	3,222
Operated by owners	1,170	1,377	1,966	2,668	2,628
Operated by tenants	530	910	737	353	594
Number of towns	25	27	27	29	29
Population	86,600	87,997	89,316	[1] 100,235	101,235
Total population in towns and on farms	97,100	98,256	102,206	112,434	113,009
Number of public schools	52	52	54	102	103
Number of churches	81	82	83	105	106
Number of banks	18	18	17	14	13
Total amount of capital stock	$3,000,000	$3,000,000	$3,250,000	$2,990,000	$2,950,000
Amount of deposits	$31,000,000	$32,000,000	$33,000,000	$30,898,499	$28,194,815
Number of depositors	40,000	40,000	44,000	31,716	30.000

[1] 5,000 soldiers included in El Paso's population.

NORTH DAKOTA PUMPING PROJECT.

WILLIAM S. ARTHUR, project manager, Williston, N. Dak.

The North Dakota pumping project is located in Williams County, N. Dak., on the Great Northern Railway. Williston is the principal town and the project headquarters. The Missouri River is the source of water supply. The irrigation season is 80 days; the average rainfall is 13 inches; the average high temperature is 99° and the average low −37° F. The principal products are alfalfa, dairy cows and hogs, corn and potatoes. Public farm units are limited to 80 acres, and private to 160 acres.

A central steam power plant is located near Williston adjoining Government-owned coal lands, where electrical energy is generated for the operation of the pumping stations of which there are four. The plan of the Williston division provides for a series of motor-driven centrifugal pumps on a barge in the Missouri River, a settling basin receiving the water from the barge, a main canal of 90 second-feet capacity extending along Little Muddy Creek to the power plant where two sets of steam-driven turbines operate centrifugal pumps for the higher lifts. From the main canal about midway between the river and power plant electrically-driven pumps raise water 28 feet for the lands on the west side of Little Muddy Creek.

SUMMARY OF DATA FOR NORTH DAKOTA PUMPING PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		10,753
Public land entered to June 30, 1922	254	
Public land open to entry on June 30, 1922	139	
State land unsold on June 30, 1922	23	
Private land, June 30, 1922	10,337	
Acreage service could supply, season of 1921		7,653
Acreage irrigated, season of 1921		2,080
Acreage cropped under irrigation, season of 1921		1,960
Acreage dry-farmed, season of 1921		2,500
Value of irrigated crops, season of 1921		$54,320.00
Value of irrigated crops per acre cropped		$27.70
Value of dry-farmed crops, season of 1921		$22,500.00
Value of dry-farmed crops per acre cropped		$9.00
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$173,986.00	
Encumbrances, disbursements and liabilities	69,692.07	
Unencumbered balance July 1, 1922		$104,293.93
Fiscal year 1923; amount specified in appropriation act		115,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	* $629.88	$684,796.83
Less—		
Loss		301,299.10
Water-right contracts, project lands (7,653 acres)		290,803.74
Total		592,102.84
Balance	* 629.88	92,693.99

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$32,137.46	$395,573.02	19,843.34	401,914.75
Less:				
Probable loss		[1] 249,816.59		249,816.59
Charges billed or contracted	31,342.12	144,893.61	18,790.48	150,809.40
Penalties and discounts (net)	795.34	862.82	1,052.86	1,288.76
Total	32,137.46	395,573.02	19,843.34	401,914.75

* Contra.

[1] Includes deficit on Buford Trenton division and on Williston division prior to Apr. 1, 1919.

Summary of data for North Dakota pumping project to end of fiscal year 1922—Contd.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$1,429,414.07	$19,815.39	$1,449,229.46
Less collections	377,511.63	.....	377,511.63
Net investment	1,051,902.44	19,815.39	1,071,717.83

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected—cash.		Uncollected June 30, 1922.
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	
To return net construction cost:					
Construction water-right charges paid in advance	.....	.....	.....	$8,250.63	.....
To return net operation and maintenance cost:					
Operation and maintenance charges, project lands (6,693.40 acres)	$11,713.45	$48,338.61	$5,841.58	27,625.16	$20,713.45
Penalties and interest	1,052.86	1,288.76	1,052.86	1,288.76	.....
Total	12,766.31	49,627.37	6,894.44	28,913.92	20,713.45
Revenues:					
Rentals of irrigating water	.....	2,149.03	.....	2,149.03	.....
Rentals of power and light	52,100.33	316,077.04	48,341.83	312,318.54	3,758.50
Total	52,100.33	318,226.07	48,341.83	314,467.57	3,758.50
Miscellaneous uncollected	.....	.....	.....	.....	27.61
Other miscellaneous collections	.....	.....	7,939.93	25,879.51	.....
Grand total collections	.....	.....	63,176.20	377,511.63	.....

ACTIVITIES DURING FISCAL YEAR.

About 3 miles of small laterals were constructed to deliver water to lands not previously irrigated.

The commercial power contract with the city of Williston remained in force and the plant was in operation the entire year under this contract. During the year 1,090,500 kilowatt hours of electrical energy were delivered to the city. The chief value of the commercial power operations lies in their making it feasible to retain the principal part of an operating organization throughout the year. It would be impracticable to disband and assemble this type of organization each year.

For the operations of the power plant 13,122 tons of coal were mined in the coal mine, which is the only Government-operated coal mine in the United States. This coal cost $26,427, or $2.01 per ton. This represented a reduction of 57 cents per ton over the previous year and 74 cents per ton under the average coal-mining costs of the community.

Operation data, Williston division, North Dakota pumping project.

Item.	1919	1920	1921
Area for which service was prepared to supply water	8,189	7,653	7,653
Acreage irrigated	2,446	2,810	2,080
Miles of canal operated	31	31	35
Water diverted (acre-feet)	4,028	4,000	2,383
Water delivered to land (acre-feet)	2,633	2,684	1,624
Water per acre of land irrigated (acre-feet)	1.08	0.97	0.78

SETTLEMENT.

There is no public land available for entry at present. The Williston irrigation district has inaugurated a campaign to reduce the size of private land holdings and correspondingly increase the settlement. Farmers of small tracts devoted to diversified crops are very successful.

Settlement data, Williston division, North Dakota pumping project.

Item.	1916	1917	1918	1919	1920	1921
Total number of farms on project	101	105	105	105	105	105
Population	175	190	195	200	200	210
Total number of irrigated farms					94	76
Operated by owners or managers	34	34	33	33	47	39
Operated by tenants	10	10	11	24	19	12
Operated by nonresidents					28	25
Population	152	155	160	181	194	200
Number of towns	2	2	2	2	2	2
Population	5,000	5,300	5,360	5,400	5,000	5,000
Population in towns and on farms	5,175	5,490	5,555	5,600	5,200	5,210
Number of public schools	5	6	6	6	6	6
Number of churches	6	6	6	6	6	7
Number of banks	3	4	4	4	3	3
Total capital stock	$185,000	$235,000	$260,000	$260,000	$260,000	$260,000
Amount of deposits	$1,500,000	$1,800,000	$2,000,000	$1,756,000	$2,000,000	$1,800,000
Number of depositors	3,300	3,500	3,800	3,600	5,010	3,600

OREGON, UMATILLA PROJECT.

H. M. SCHILLING, project manager, Hermiston, Oreg.

The Umatilla project is located in Umatilla and Morrow Counties and is traversed by the main line railroad of the Oregon-Washington Railroad & Navigation Co. The project towns are Hermiston, Umatilla, Irrigon, and Boardman. The source of water supply is the Umatilla River. The average elevation of the irrigable area is 470 feet above sea level, the average rainfall for 13 years is 8.71 inches, and the length of the irrigation season is 210 days. The principal products are alfalfa, fruits, vegetables, honey, and dairy produce.

The irrigation plan of the East division of the project provides for the diversion of water from the Umatilla River above Echo, Oreg., through a feed canal 24.5 miles in length to the Cold Springs Reservoir which has a storage capacity of 50,000 acre-feet, and from which it is delivered directly to the land through a system of canals and laterals. Water is also diverted from the Umatilla River near the mouth of Butter Creek by the Maxwell Canal and when available supplements the discharge from the reservoir. For the West division water is diverted from the Umatilla River about half way between Hermiston and Umatilla and is delivered directly to lands bordering the Columbia River in the vicinity of Umatilla, Irrigon, and Boardman.

SUMMARY OF GENERAL DATA FOR UMATILLA PROJECT TO END ON FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		28,300
Public land entered to June 30, 1922	5,360	
Public land open to entry on June 30, 1922	97	
Public land withdrawn on June 30, 1922	2,376	
Railroad land unsold on June 30, 1922	3,319	
Other private land, June 30, 1922	17,148	
Acreage service could supply, season of 1921		24,400
Acreage irrigated, season of 1921		13,150
Acreage cropped under irrigation, season of 1921		11,610
Value of irrigated crops, season of 1921		$343,890
Value of irrigated crops per acre cropped		$29.52
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$478,752.66	
Encumbrances, disbursements and liabilities	136,037.17	
Unencumbered balance July 1, 1922		$342,715.49
Fiscal year 1923, amount specified in appropriation act		500,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$221,223.79	$2,798,885.14
Less water-right contracts—		
Project lands (24,040 acres)	1,012,208.02	2,682,304.49
Other lands (120 acres)		4,800.00
Total	1,012,208.02	2,687,104.49
Balance	*790,984.23	111,780.65

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$43,709.78	$290,782.91	34,617.97	308,756.00
Less:				
Charges billed or contracted	52,012.96	295,449.64	51,984.22	295,449.64
Penalties and discounts (net)	192.43	2,869.13	774.85	3,643.98
Total	52,205.39	298,318.77	52,759.07	299,093.62
Balance	*8,495.61	*7,535.86	*18,141.10	9,662.38

* Contra.

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Summary of general data for Umatilla project to end of fiscal year 1922—Continued.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$3,258,599.11	$32,334.05	$3,290,933.16
Less collections	733,570.24		733,570.24
Net investment	2,525,028.87	32,334.05	2,557,362.92

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$29,225.00	$341,490.34	$8,101.94	$305,015.47		$36,474.87
Construction water-right charges paid in advance				19,253.07		
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (24,400 acres)	26,349.98	250,934.13	24,217.38	214,177.74	$3,277.56	33,478.83
Penalties and interest	1,041.17	6,921.54	1,041.17	6,921.54		
Total	27,391.15	257,855.67	25,258.55	221,099.28	3,277.56	33,478.83
Operation and maintenance charges paid in advance				534.96		
Revenues:						
Rentals of irrigating water	2,674.05	30,786.09	1,125.89	29,810.05	609.42	366.62
Rentals of grazing and farming lands	331.55	1,008.60	331.55	1,008.60		
Total	3,005.60	31,794.69	1,457.44	30,818.65	609.42	366.62
Miscellaneous uncollected						871.53
Other miscellaneous collections			6,092.67	156,848.81		
Grand total collections			40,910.60	733,570.24		

ACTIVITIES DURING FISCAL YEAR.

East division.—The principal construction work in progress was the continuation of the improvement of the A Canal, of which 2.6 miles were enlarged and lined, involving the excavation of 15,000 cubic yards of material and the placing of 3,000 cubic yards of concrete lining. In addition a by-pass canal of 50 second-feet capacity and 700 feet long was built from the A Canal to the Maxwell Canal.

In connection with betterments to the irrigation system as provided in the contract with the Hermiston irrigation district the D1 pipe was extended to take water from the Maxwell Canal instead of from the C Canal, thus adding considerably to its capacity. In addition about 1,700 feet of canal between D1 and D2 pipes were enlarged and lined with concrete and the canal below D2 pipes was enlarged. Four short pipe lines were built from the Maxwell Canal to turnouts formerly delivering from the C Canal, thus permitting the abandonment of about 2 miles of the latter from which excessive seepage formerly occurred.

The construction of lateral extensions was continued, about 3.3 miles of lateral being built, 4,845 linear feet of 16-inch and 2,150 linear feet of 12-inch concrete pipe were laid, and 175 cubic yards of concrete lining were placed. All pipe used was manufactured by Government forces.

West division.—Lateral construction, both original and supplemental construction, was carried on intermittently throughout the year. One mile of lateral was built involving the laying of 4,300 linear feet of 12-inch, 15-inch, and 16-inch concrete pipe and the placing of 511 cubic yards of concrete lining.

Operation and maintenance.—East division. Diversions for the feed canal for storage were from November 27, 1921, to June 17, 1922. From December 19, 1921, to February 4, 1922, severe weather caused ice to form in the canal, making operations intermittent. Floods in Stage Gulch during February caused by quick melting of snow on a frozen surface again interfered with operations. To counterbalance the intermittent service of the feed canal, Cold Springs Canyon and Despain Gulch discharged flood water amounting to 9,036 acre-feet into Cold Springs Reservoir. The maximum storage of 49,700 acre-feet was reached June 11, 1922. Available storage on June 30, 1922, was 43,400 acre-feet. Delivery of water to the distribution system was from July 1 to October 17, 1921, and began on April 1, 1922. West division. Diversions of water by the Main Canal for irrigation were from July 1 to October 31, 1921, and began on April 1, 1922.

Operation data, Umatilla project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Area for which service was prepared to supply water	19,000	24,247	24,300	24,300	24,395	24,400
Miles of canal operated	163	165	177	177	177	177
Acreage irrigated	5,900	7,327	9,100	10,533	12,030	13,150
Water diverted (acre-feet)	93,000	99,900	118,154	162,850	165,534	130,872
Water delivered to land (acre-feet)	34,380	45,365	48,163	53,500	50,651	57,492
Per acre of land irrigated, (acre-feet)	5.83	6.10	5.61	5.10	4.21	4.37

Settlement data, Umatilla project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	800	869	875	1,000	1,000
Population	1,024	1,127	1,200	1,472	1,562
Number of irrigated farms	411	459	500	528	544
Operated by owners or managers	302	339	350	450	442
Operated by tenants	109	120	150	78	102
Population	1,024	1,200	1,200	1,280	1,562
Number of towns	4	4	4	4	4
Population	1,100	1,200	1,200	1,280	1,280
Population in towns and farms	2,124	2,327	2,400	2,752	2,842
Number of public schools	6	6	6	6	6
Number of churches	9	9	9	9	9
Number of banks	1	1	1	1	1
Capital stock	$25,000	$25,000	$25,000	$25,000	$25,000
Amount of deposits	$157,000	$170,000	$232,000	$217,590	$235,367
Number of depositors	960	1,000	1,129	1,200	1,200

OREGON-CALIFORNIA, KLAMATH PROJECT.

Herbert D. Newell, project manager, Klamath Falls, Oreg.

The Klamath project is located in Southern Oregon and Northern California. The project is served by the Southern Pacific and the Oregon California and Eastern Railroads; Klamath Falls with a population of about 5,500 is the principal project city, is the center of an extensive lumber industry, and as a shipping point ranks second in the State.

The average elevation of the irrigable lands is about 4,100 feet above sea level. The principal agricultural products are alfalfa and grain; stock raising is practiced to a large extent; the dairying industry, begun several years ago, is increasing rapidly. The principal markets are Portland, Oreg., Sacramento and San Francisco, Calif. The irrigation season usually begins about May 1, and ends on September 30.

The project derives its water supply principally from the Upper Klamath Lake which is situated just north of Klamath Falls. Water for irrigation is diverted into the Main Canal at the lower end of the lake; a short distance below the point of diversion the Main Canal passes under the city of Klamath Falls by means of a concrete-lined tunnel, 3,300 feet in length.

An important feature of the project is the reclamation of the bed of Tule Lake; The lands are first uncovered by causing the waters to recede; later the necessary irrigation works will be constructed. Tule Lake has no visible outlet; the lake-bed lands are being uncovered by the prevention of inflow and by evaporation. The principal works designed to prevent inflow are the Clear Lake Reservoir and the Lost River diversion canal. Clear Lake is located on the headwaters of Lost River and is in effect an evaporating basin covering an area of about 25,000 acres; surplus storage is available for the irrigation of about 12,000 acres in Langell Valley. The diversion canal connects Lost River with the Klamath River; this canal diverts water entering Lost River below the Clear Lake Dam to the Klamath River.

SUMMARY OF DATA FOR KLAMATH PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		140,880
Public land entered to June 30, 1922	2,718	
Public land withdrawn on June 30, 1922	27,300	
Private land, June 30, 1922	110,832	
Acreage service could supply, season of 1921		51,000
Acreage irrigated, season of 1921		[1] 36,100
Acreage cropped under irrigation, season of 1921		32,720
Value of irrigated crops, season of 1921		$431,950.00
Value of irrigated crops, per acre cropped		$13.20
Finances:		
Appropriations—		
Fiscal year, 1922, all congressional authorizations	$1,251,263.04	
Encumbrances, disbursements, and liabilities	380,689.53	
Unencumbered balance, July 1, 1922		$870,573.51
Fiscal year 1923, amount specified in appropriation act		700,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$403,468.58	$3,540,333.84
Less water-right contracts—		
Project lands (42,142 acres)	2,305.29	1,820,743.30
Warren Act lands (approximately 40,029 acres)	51,048.44	142,605.24
Other lands (approximately 22,072 acres)	*4,981.58	133,888.40
Total	48,372.15	2,097,236.94
Balance	355,096.43	1,443,096.90

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$65,380.20	$502,722.91	44,831.28	525,527.92
Less:				
Charges billed or contracted	73,646.50	515,396.08	62,535.38	504,284.96
Penalties and discounts (net)	27.78	*2,652.57	864.43	*1,796.42
Total	73,674.28	512,743.51	63,399.81	502,488.54
Balance	*8,294.08	*10,020.60	*18,568.53	23,039.38

* Contra.

[1] Total irrigated area, 44,883 acres, including 8,783 acres of Van Brimmer lands and in miscellaneous pumping divisions.

Summary of data for Klamath project to end of fiscal year 1922—Continued.

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$4,323,031.12	$53,965.98	$4,376,997.10
Less collections	1,086,417.97	.....	1,086,417.97
Net investment	3,236,613.15	53,965.98	3,290,579.13

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected, June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$27,737.23	$502,285.70	$41,613.58	$475,896.73	.....	$26,388.97
Construction water-right charges paid in advance	.....	.....	.....	322.61	.....	.....
To return net operation and maintenance costs:						
Operation and maintenance charges—						
Project lands (42,142 acres)	37,642.51	427,427.95	63,826.17	359,614.68	$30,014.15	37,799.12
Warren Act lands (approximately 8,335 acres)	602.72	1,459.36	526.40	1,383.04	.....	76.32
Other lands (approximately 5,000 acres)	*10,911.12	200.00	*8,333.34	.....	.....	200.00
Penalties and interest	916.23	2,623.78	916.23	2,623.78	.....	.....
Total	28,250.34	431,711.09	56,935.46	363,621.50	30,014.15	38,075.44
Operation and maintenance charges paid in advance	.....	.....	.....	107.90	.....	.....
Revenues:						
Rentals of irrigating water	1,241.14	42,189.62	734.30	41,665.96	.....	523.66
Rentals of power and light	1,000.00	6,020.00	1,000.00	6,020.00	.....	.....
Rentals of grazing and farming lands	2,919.30	15,352.49	2,879.30	12,655.77	.....	2,696.72
Total	5,160.44	63,562.11	4,613.60	60,341.73	.....	3,220.38
Miscellaneous uncollected	.....	.....	.....	.....	.....	2,423.02
Other miscellaneous collections	.....	.....	25,644.19	186,127.50	.....	.....
Grand total collections	.....	.....	128,806.83	1,086,417.97	.....	.....

* Contra.

ACTIVITIES DURING FISCAL YEAR.

On the C Canal, the old timber flume was replaced with a reinforced precast concrete flume 4,316 feet long. The waterway is 11 feet wide and 6 feet high; the flume is supported on concrete bents averaging about 10 feet in height, spaced at intervals of 12 feet. The precast units were cast at the side of the old timber flume during the irrigation season of 1921. After the irrigating season, the old timber flume was dismantled and the new flume erected. At the lower end the flume connects with a concrete-lined canal 7,600 feet long.

The C–G Canal is about 4,500 feet along and connects the C and G Canals; its purpose is to provide a new method of supply for the G Canal and to supply water for the Tule Lake division. The canal

excavation, the headworks, and the drop at the upper end of the canal were completed prior to June 30, 1921. The Lost River structures, consisting of the inlet, outlets, and three pipe lines each 6 feet 3 inches in diameter, were constructed during the latter part of 1921. One of the pipe lines crosses Lost River and supplies the G Canal; another discharges water into Lost River for the Tule Lake lands; and the third will discharge to the diversion canal and will be used only in an emergency.

For the Tule Lake division, a diversion dam was constructed on Lost River about 2 miles east of Merrill, Oreg. The diversion dam is of the Ambursen type and is constructed of reinforced concrete. The J Canal will supply the Tule Lake lands; to June 30, 1922, this canal had been constructed for a distance of about 8.5 miles or nearly to the Oregon-California boundary. During the forepart of 1922, work was begun on the Tule Lake lateral system; 5 miles of laterals had been constructed to June 30. The excavation on both the canal and lateral system was being done by drag-line excavators. The canal structures will be of concrete and most of the lateral structures of redwood lumber.

The canal and lateral system for the Tule Lake division has been designed to serve an area of about 25,000 acres. All of the land reclaimed from the bed of Tule Lake is in public ownership and will be available for soldier settlement.

In the Langell Valley division, field surveys were begun early in May, 1922. During June a construction camp was established near the Langell Diversion Dam. Construction of the dam and of the West Side Canal was begun shortly after July 1, 1922, and should be completed prior to June 30, 1923. The dam will be constructed by Government forces and most of the canal by contract.

Operation data, Klamath project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	40,000	44,000	50,000	50,000	50,000	51,000
Acreage irrigated	29,351	33,635	38,269	42,881	44,800	[1] 44,883
Miles of canal operated	216	216	210	225	225	225
Water diverted (acre-feet)	66,010	66,368	104,926	119,850	114,179	106,104
Water delivered (acre-feet)	29,970	32,780	52,090	56,490	49,754	48,713
Per acre of land (acre-feet)	1.02	0.975	1.36	1.32	1.11	1.11

[1] Includes 8,783 acres of Van Brimmer lands and in miscellaneous pumping divisions.

Settlement data, Klamath project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	527	560	570	570	570
Population	1,610	1,800	2,000	2,050	2,200
Number of irrigated farms	527	530	540	542	542
Operated by owners or managers	336	340	350	352	430
Operated by tenants	191	190	190	190	112
Population	1,490	1,510	1,600	1,650	1,720
Number of towns	4	4	5	5	5
Population	4,800	5,000	5,300	5,500	5,800
Total population, towns and farms	6,410	6,800	7,300	7,550	8,000
Number of public schools	20	20	21	21	22
Number of churches	9	10	10	10	10
Number of banks	3	4	5	6	5
Total capital stock	$175,000	$225,000	$500,000	$595,000	$545,000
Amount of deposits	$1,390,000	$2,383,000	$4,000,000	$4,500,000	$3,500,000
Number of depositors	5,310	6,264	6,500	9,250	8,000

SOUTH DAKOTA, BELLE FOURCHE PROJECT.

B. E. Hayden, project manager, Newell, S. Dak.

The Belle Fourche project is located in western South Dakota a little north and east of the Black Hills. The district is served by the Chicago & North Western Railway, which runs into the heart of the project, and the Burlington Railway, which runs into the Black Hills. The principal towns are Belle Fourche, Newell, Nisland, and Fruitdale. The source of water supply is the Belle Fourche River. The climate is semiarid, with an average annual rainfall of about 14 inches; the temperature ranges from −38° to 105° F. The character of the soils varies from light sandy loam to heavy clay, the clay soils predominating. The duty of water averages 1.5 acre-feet per acre. The principal products are alfalfa, wheat, oats, corn, potatoes, sugar beets, garden truck, and live stock, the chief markets for which are Omaha, Minneapolis, and Chicago.

The irrigation plan provides for the diversion of water from the Belle Fourche River by means of a dam about 1½ miles below Belle Fourche, S. Dak., and an inlet or supply canal about 6½ miles in length into a storage reservoir controlled by the Belle Fourche Dam on Owl Creek, a tributary of the Belle Fourche River; the distribution of water from the inlet canal to a small area of land and the distribution of water from the reservoir through two canal systems to lands on both sides of the Belle Fourche River.

SUMMARY OF DATA FOR BELLE FOURCHE PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		96,800
Public land entered to June 30, 1922	37,427	
Public land open to entry on June 30, 1922	117	
Public land withdrawn on June 30, 1922	6,973	
State land unsold on June 30, 1922	301	
Other private land, June 30, 1922	51,982	
Acreage service could supply, season 1921		82,328
Acreage irrigated, season of 1921		55,100
Acreage cropped under irrigation, season of 1921		55,100
Value of irrigated crops, season of 1921		$513,750.00
Value of irrigated crops per acre cropped		$9.32
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$533,365.02	
Encumbrances, disbursements, and liabilities	126,840.29	
Unencumbered balance July 1, 1922		$406,524.73
Fiscal year 1923, amount specified in appropriation act		350,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$85,628.36	$3,568,689.69
Less water-right contracts—		
Project lands (76,914.93 acres)	1,215.06	2,616,175.69
Warren Act lands (54.8 acres)		1,671.40
Total	1,215.06	2,617,847.09
Balance	84,413.30	950,842.60

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$129,322.92	$866,792.03	94,404.67	895,286.86
Less:				
Charges billed or contracted	147,339.67	772,305.88	148,497.49	772,118.09
Penalties and discounts (net)	*265.71	2,128.01	509.93	2,383.65
Total	147,073.96	774,433.89	149,007.42	774,501.74
Balance	*17,751.04	92,358.14	*54,602.75	120,785.12

* Contra.

Summary of data for Belle Fourche project to end of fiscal year 1922—Continued.

	Reclamation fund.	Judgments Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$4,490,499.95	$37,170.22	$41,118.64	$4,568,788.81
Less collections	1,040,983.62			1,040,983.62
Net investment	3,449,516.33	37,170.22	41,118.64	3,527,805.19

	Due.		Collected.			Uncollected, June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$110,686.19	$631,207.56	$26,000.00	$462,924.77	$11.08	$168,271.71
Construction water-right charges paid in advance				407.88		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (76,914.93 acres)	148,387.89	771,765.53	36,390.15	496,008.44	11,938.72	263,818.37
Warren Act lands (54.8 acres)	109.60	352.56		46.00		306.56
Penalties and interest	1,539.29	14,322.37	1,505.23	14,288.31	34.06	
Total	150,036.78	786,440.46	37,895.38	510,342.75	11,972.78	264,124.93
Operation and maintenance charges paid in advance				245.86		
Revenues, rentals of irrigating water	793.16	4,651.38	793.16	4,501.38		150.00
Miscellaneous uncollected						192.90
Other miscellaneous collections			4,471.52	62,560.98		
Grand total collections			69,160.06	1,040,983.62		

ACTIVITIES DURING FISCAL YEAR.

The excavation for Willow Creek laterals was completed on November 19, 1921. Field surveys and office computation were made of irrigable areas in the Willow Creek district.

Seepage encroachments during the year were slight although noticeable; 3,921 acres have been relieved temporarily of charges on account of becoming nonproductive. The question of a comprehensive drainage system for the project is receiving consideration.

The season of 1921 demonstrated the necessity of irrigation. Water was turned into the canals on May 2 and run continuously until September 25. Precipitation for the year was 10.2 inches, or about 70 per cent of normal. The total flow of the Belle Fourche River for the year was 166,789 acre-feet, compared with a flow of 506,389 acre-feet the previous year. Storage in the Belle Fourche Reservoir on June 30 was 158,380 acre-feet. The last killing frost in the spring occurred on May 15 and the first in the fall on September 30.

The Ruth excavator was put at cleaning canals on July 29 and worked until November 18. It moved during that time 26,907 cubic yards of material at a cost of 7.5 cents per cubic yard.

The better prices received for fat lambs, hogs, and cattle gave considerable encouragement to the farmers and overcame to a certain extent the depression of the previous two years. Grain crops were light and hay found little market until late in the winter. Alfalfa continues to be the principal crop and comprises about 45 per cent of the irrigated area. Wheat, oats, and corn each represent about 10 per cent of the irrigated acreage.

Operation data, Belle Fourche project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	78,591	83,335	82,592	82,634	82,430	83,328
Acreage irrigated	48,468	51,000	52,445	56,638	59,850	55,100
Miles of canal operated	529	612	612	615	615	615
Water diverted (acre-feet)	58,395	171,749	190,844	121,293	101,113	141,696
Water delivered to farms (acre-feet)	39,133	61,134	51,731	82,409	36,616	71,715
Per acre of land irrigated (acre-feet)	0.81	1.21	0.99	1.46	0.61	1.3

Settlement data, Belle Fourche project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	1,292	1,292	1,292	1,292	1,292
Population	2,400	2,675	2,675	2,700	2,700
Number of irrigated farms	813	906	1,000	1,024	1,033
Operated by owners or managers	553	590	668	692	451
Operated by tenants	260	316	332	332	582
Population	2,150	2,424	2,597	2,650	2,510
Number of towns	5	5	5	5	5
Population	1,845	2,100	2,200	2,350	2,386
Total population in towns and on farms	4,245	4,775	4,875	5,050	5,086
Number of public schools	23	24	24	26	24
Number of churches	11	11	11	9	9
Number of banks	9	9	9	9	9
Total capital stock	$140,000	.....	.....	$250,000	$250,000
Amount of deposits	$2,206,993	$2,391,262	$3,837,680	$2,657,621	$2,373,380
Number of depositors	.....	.....	.....	6,560	.....

UTAH, STRAWBERRY VALLEY PROJECT.

W. L. Whittemore, project manager, Provo, Utah.

The Strawberry Valley Project is located in the north central part of Utah; the irrigable area lies along the southeastern shore of Utah Lake, in Utah County, and the storage works in Wasatch County, 30 miles east of Springville. The irrigation plan provides for the storage of water in Strawberry Reservoir, the carriage of these stored waters through Strawberry Tunnel, approximately 4 miles long, into Diamond Fork, a tributary of the Spanish Fork River, and the diversion of water from this stream through canal systems to the irrigable area.

The length of the irrigation season is 169 days, from April 15 to September 30. The average elevation of the project lands is about 4,600 feet above sea level. The average rainfall at Payson for a period of 16 years is 18½ inches, most of which occurs from September 1 to May 1. The climate is temperate, varying from 95° F. in summer to 0° F. in winter. The last killing frost in the spring usually occurs prior to May 10, and the first in the fall after October 1. The soil varies from sandy loam to heavy clay and varying mixtures of both, to black alluvium and loam in the bottom lands. The mesa lands are sandy loam underlaid with gravel so that natural drainage is excellent. All soils are easily worked and extremely fertile if properly cultivated, and are suitable for raising any crop that will grow in the Temperate Zone. The principal crops are wheat, oats, barley, millet, alfalfa, timothy, sugar beets, potatoes, corn, cane, apples, plums, pears, peaches, prunes, apricots, cherries, melons, and all kinds of vegetables. The sugar beet, cereal, and hay crops constitute the staple crops under the project.

The project is traversed by two transcontinental railroad lines, the Denver & Rio Grande Western and the Los Angeles & Salt Lake (Union Pacific system). There is also a local electric interurban line connecting the main project towns with Salt Lake City and points in northern Utah.

SUMMARY OF DATA FOR STRAWBERRY VALLEY PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		55,389
Public land entered to June 30, 1922	1,953	
Other private land, June 30, 1922	53,436	
Acreage service could supply, season of 1921		53,889
Acreage irrigated, season of 1921		[1] [2] 47,436
Acreage cropped under irrigation, season of 1921		[1] [3] 47,167
Value of irrigated crops, season of 1921		[1] [4] $1,557,089.00
Value of irrigated crops per acre cropped		[1] [5] $33.00
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$186,767.37	
Encumbrances; disbursements and liabilities	85,050.98	
Unencumbered balance July 1, 1922		$101,716.39
Fiscal year 1923; amount specified in appropriation act		85,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	*$8,365.16	$3,472,461.80
Less:		
Water-right contracts—		
Project (lands 19,143 acres)	5,982.00	1,576,038.90
Warren Act lands (approximately 15,335 acres)		644,580.00
Other lands (approximately 12,958 acres)	1,188.00	862,380.47
Total	7,170.00	3,082,999.37
Balance	*15,535.16	389,462.43

[1] Includes High Line and Spanish Fork divisions, and Springville-Mapleton irrigation district.
[2] Project lands only, 32,500 acres.
[3] Project lands only, 31,380 acres.
[4] Project lands only, $1,020,590.
[5] Project lands only, $32.52.
* Contra.

Summary of data for Strawberry Valley project to end of fiscal year 1922—Continued.

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$134,369.69	$301,575.14	$53,743.64	$327,838.75
Less:				
Charges billed or contracted	63,078.45	216,301.87	70,061.89	223,363.31
Penalties and discounts (net)	*1,264.30	*6,107.85	*679.32	*5,430.26
Total	61,814.15	210,194.02	69,382.57	217,933.05
Balance	72,555.54	91,381.12	*15,638.93	109,905.70

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$4,118,306.02	$440.00	$27,570.70	$4,146,316.72
Less collections	950,098.14			950,098.14
Net investment	3,168,207.88	440.00	27,570.70	3,196,218.58

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected, June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$93,099.76	$355,824.97	$63,484.23	$313,689.35		$42,135.62
Construction water-right charges paid in advance				58.06		
To return net operation and maintenance cost:						
Operation and maintenance charges—						
Project lands (19,143 acres)	34,900.54	127,678.71	23,295.86	106,687.53	$4,386.97	16,604.21
Warren Act lands (approximately 15,335 acres)	11,681.46	28,799.00	7,276.93	23,682.87	244.43	4,871.70
Other lands (approximately 12,958 acres)	23,479.89	66,885.60	20,394.66	61,170.85	2,307.29	3,407.46
Penalties and interest	740.67	1,508.43	740.67	1,508.43		
Total	70,802.56	224,871.74	51,708.12	193,049.68	6,938.69	24,883.37
Revenues:						
Rentals of irrigating water		8,388.39		8,388.39		
Rentals of power and light	22,035.51	103,087.41	23,137.72	101,468.70		1,618.71
Rentals of grazing and farming lands	12,165.60	120,530.66	12,165.60	120,530.66		
Total	34,201.11	232,006.46	35,303.32	230,387.75		1,618.71
Miscellaneous uncollected						467.30
Other miscellaneous collections			2,156.81	212,913.30		
Grand total collections			152,652.48	950,098.14		

ACTIVITIES DURING FISCAL YEAR.

Strawberry Tunnel.—Work on repairs to Strawberry Tunnel was resumed during September, 1921, when the quarry at West Portal was reopened for obtaining concrete material. Major operations began on November 1 and continued without interruption until January 29, 1922, when repairs were completed. Between August, 1920, and January 29, 1922, 1,828 cubic yards of concrete were placed, 1,557 in putting in and strengthening 12,000 linear feet of floor and 271 in setting 148 reinforced concrete bays in sides.

Strawberry Reservoir.—On May 16, 1922, Strawberry Reservoir was filled for the third time since 1915.

East Portal permanent camp.—A 30-inch galvanized-iron ventilating pipe was installed during October, 1921, in the gate operating house to conduct air from Strawberry Tunnel through the roof of the building.

Power Canal.—A 10-foot radial gate was installed at the lower end of the upper plunge basin during the latter part of May, 1921, and a new concrete retaining wall constructed along the north side of the joint canal between the tail race and the wasteway during May, 1922.

Water Users' Association.—Active steps were taken to form a water users' association, embracing all water users who have purchased Strawberry water. The articles of incorporation of this company were filed with the secretary of state under the name of "Strawberry Water Users' Association." A tentative form of contract for taking over the care, operation, and maintenance of the project was submitted to the Director for approval.

Operation data, Strawberry Valley project.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	28,000	30,000	34,000	45,000	50,000	53,889
Acreage irrigated	25,000	28,147	32,539	44,300	[1] 45,450	[1] 47,436
Miles of canal operated	9.3	9.3	9.3	9.3	9.3	9.3
Water diverted (acre-feet)	35,000	61,300	55,242	70,467	69,100	[2] 83,000
Water delivered to land (acre-feet) [3]	29,500	51,750	46,250	59,125	57,900	71,200
Per acre of land irrigated (acre-feet)	1.18	1.84	1.42	1.33	1.27	1.50

[1] Includes High Line and Spanish Fork divisions and Springville-Mapleton irrigation district.
[2] 14,000 acre-feet of free water distributed.
[3] Estimated.

Settlement data, Strawberry Valley project.

Item.	1920	1921
Total number of farms on project	3,000	3,200
Population	7,000	7,000
Number of irrigated farms	2,700	2,740
Operated by owners or managers	2,200	2,340
Operated by tenants	500	400
Population	6,500	6,500
Number of towns	12	12
Population	16,000	16,000
Total population of towns and farms	23,000	23,000
Number of public schools	22	22
Number of churches	23	23
Number of banks	6	6
Total capital stock	$285,000	$285,000
Total amount of deposits	$2,180,000	$1,750,000
Total number of depositors	9,830	10,000

WASHINGTON, OKANOGAN PROJECT.

CALVIN CASTEEL, project manager, Okanogan, Wash.

The Okanogan project is located in Okanogan County, Wash., on a branch line of the Great Northern Railway running from Wenatchee to Oroville, Wash. Towns on the project are Okanogan, Omak, and Riverside. The source of water supply is Salmon Creek with storage in Conconully and Salmon Lake Reservoirs. Water is pumped from the Okanogan River by the Robinson Flat pumping plant, from Duck Lake by the Duck Lake pumping plant, and from two Government wells to supplement the flow of gravity water from Conconully and Salmon Lake Reservoirs. A pumping plant is also operated at the Salmon Lake Reservoir during dry years which pumps water from Salmon Lake below the elevation at which water can be secured by gravity flow.

The length of the irrigation season is from May 1 to September 30, 153 days. The average elevation is 1,000 feet above sea level; the average rainfall is about 11.5 inches; the temperature ranges from 108° F. to −10° F. The soil is volcanic ash and gravel on the upper benches and sand and gravel on the lowlands along the Okanogan River. The principal crop of the project is apples with some peaches, pears, small fruits, hay, and vegetables. The principal markets are the States east. The duty of water is 2½ acre-feet per acre per annum at the farm.

SUMMARY OF DATA FOR OKANOGAN PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete (estimated)		7,700
Public land entered to June 30, 1922	116	
Private land, June 30, 1922	7,584	
Acreage service could supply, season of 1921		8,200
Acreage irrigated, season of 1921		5,650
Acreage cropped under irrigation, season of 1921		5,330
Value of irrigated crops, season of 1921		$2,051,270
Value of irrigated crops per acre cropped		$385
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$492,084.51	
Encumbrances, disbursements, and liabilities	114,987.36	
Unencumbered balance July 1, 1922		$377,097.15
Fiscal year 1923, amount specified in appropriation act		40,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$162,558.48	$1,398,057.67
Less water-right contracts, project lands (6,527 acres)	200,000.00	1,503,003.29
Balance	*37,441.52	*104,945.62

	Calendar year 1921.	To Dec. 31, 1921.		
Net operation and maintenance cost	$60,389.63	$305,506.28	48,110.84	244,098.25
Less:				
Charges billed or contracted	45,029.12	203,511.94	45,231.62	203,426.44
Penalties and discounts (net)	2,530.82	3,443.05	2,606.73	4,795.90
Total	47,559.94	206,954.99	47,838.35	208,222.34
Balance	12,829.69	98,551.29	272.49	35,875.91

	Reclamation fund.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$1,712,659.07	$41,804.29	$1,761,463.36
Less collections	341,386.64		341,386.64
Net investment	1,378,272.43	41,804.29	1,420,076.72

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected, June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Water-right charges	$9,327.15	$50,711.18	$6,636.15	$41,126.87	.....	$9,584.31
Construction water-right charges paid in advance	.....	.....	.....	158.19	.....	.....
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands, (6,736 acres)	50,104.42	184,976.03	46,899.34	165,789.58	$2,541.11	16,645.34
Penalties and interest	2,545.20	5,154.93	2,530.46	4,612.48	542.45	.....
Total	52,649.62	190,130.96	49,429.80	170,402.06	3,083.56	16,645.34
Revenues:						
Rentals of irrigating water	457.25	109,976.27	410.40	105,860 29	2,319 09	1,796.89
Rentals of power and light	.....	1,754.71	.....	1,754.71	.....	.....
Rentals of grazing and farming lands	86.00	672 50	86 00	672 50	.....	.....
Total	543.25	112,403.48	496.40	108,287.50	2,319.09	1,796.89
Miscellaneous uncollected	.....	.....	.....	.....	.....	1,507.35
Other miscellaneous collections	.....	.....	3,928.57	21,412 02	.....	.....
Grand total collections	.....	.....	60,490.92	341,386 64	.....	.....

ACTIVITIES DURING FISCAL YEAR.

Work on the Salmon Lake Dam and on the enlargement of Conconully Reservoir was completed in October, 1921. During the spring of 1922 electric pumping machinery was installed at the Duck Lake and Government wells pumping plants in place of the engine-driven outfits previously in use. A transmission line about 3½ miles in length was constructed and connected with the lines already in use. Approximately 11,900 linear feet of concrete lining were placed in the lateral system where losses from seepage had been excessive.

Water supply conditions were much better in 1921 than in 1920. An average of 2.96 acre-feet per irrigated acre was delivered to the project lands; the Robinson Flat pumping plant was operated during the entire season and the Duck Lake and Salmon Lake pumping plants for a short time each to supplement the supply of gravity water. There was a heavy snowfall during the winter of 1921–22, but owing to the cold windy spring a great deal of water was either carried off in the form of evaporation or disappeared in the ground on the watershed and not sufficient water was obtained to supply the project lands with the necessary amount from gravity flow. It is estimated that by pumping approximately 4,000 acre-feet from below the gate sill of Salmon Lake Reservoir the project lands under the gravity system will receive about 2 acre-feet per acre. At the end of the fiscal year the Salmon Lake pumping plant was being increased in size by the addition of the 125-horsepower engine formerly used at the Duck Lake pumping plant and a 20-inch pump to enable the plant to pump 4,000 acre-feet before the end of the irrigation season. In addition to the Salmon Lake pumping plant, the Duck Lake and Robinson Flat pumping plants and Government wells were in operation to augment the flow of gravity water from Conconully Reservoir.

Operation data, Okanogan project, by calendar years.

Item.	1917	1918	1919	1920	1921
Acreage for which the service was prepared to supply water	10,099	10,099	10,099	8,200	8,200
Acreage irrigated	8,000	6,402	5,849	5,440	5,650
Miles of canal operated	79	79	79	79	79
Water diverted (acre-feet)	25,182	8,827	13,837	8,435	21,866
Water delivered to land (acre-feet)	19,801	6,339	9,967	5,259	16,706
Per acre of irrigated land (acre-feet)	2.49	0.99	1.70	0.96	2.96

Settlement data, Okanogan project.

Item.	1917	1918	1919	1920	1921
Total number of farms on project	560	594	594	594	439
Population	1,050	1,162	1,147	1,150	1,220
Number of irrigated farms	475	401	407	400	439
Operated by owners or managers	465	378	361	350	388
Operated by tenants	10	23	46	50	51
Population	1,050	1,162	1,147	1,150	1,220
Number of towns	3	3	3	3	3
Population	1,250	1,400	1,520	1,885	2,150
Total population in towns and on farms	2,300	2,562	2,667	3,035	3,370
Number of public schools	7	7	7	5	6
Number of churches	8	8	8	8	8
Number of banks	4	4	5	5	5
Total capital stock	$135,000	$135,000	$160,000	$155,000	$155,000
Amount of deposits	$450,000	$500,000	$600,000	$1,050,100	$1,043,000
Number of depositors	1,700	1,750	1,800	2,100	2,200

WASHINGTON, YAKIMA PROJECT.

J. L. LYTEL, project manager, Yakima, Wash.

The Yakima project, comprising the Sunnyside, Tieton, Kittitas, Moxee, Roza, and Kennewick divisions, is located in Kittitas, Yakima, and Benton Counties, Wash. The water supply comes from the Yakima River and its tributaries, supplemented by storage in Keechelus, Kachess, Cle Elum, Bumping, Tieton, and Clear Creek Reservoirs. Sunnyside division diverts water from the east side of the Yakima River at Union Gap for the irrigation of 107,600 acres and Tieton division from the Tieton River, about 15 miles above its mouth, for 32,000 acres. The project plan provides for the ultimate irrigation of 70,287 acres in the Kittitas division with diversion from the Yakima River at Easton, 58,350 acres in the Roza division diverting from the Yakima River about 10 miles above Yakima, 35,000 acres in the Kennewick division diverting from the Yakima River at Prosser, and 36,750 acres in the Moxee division with diversion from the Tieton River about 5 miles above its mouth. The Wapato Indian project, now being constructed by the United States Indian Service, diverts water from the west side of the Yakima River at Union Gap, for the irrigation of 120,000 acres on the Yakima Indian Reservation.

The irrigation season on the Sunnyside division extends from April 1 to October 31 (214 days) and on the Tieton from April 20 to September 30 (164 days). The water duty on the Sunnyside division is 3 acre-feet per acre, and on the Tieton division 2.4 acre-feet per acre. The soil is volcanic ash, sandy loam, and decomposed basalt. The principal products are alfalfa, apples, pears, peaches, grains, potatoes, sugar beets, hops, stock, and dairy products.

Transportation is furnished by the Northern Pacific, Union Pacific, and Chicago, Milwaukee & St. Paul Railways.

SUMMARY OF DATA FOR YAKIMA PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is completed		339,987
Public land entered to June 30, 1922	7,358	
Public land withdrawn on June 30, 1922	13,688	
State land unsold on June 30, 1922	5,939	
Indian land, June 30, 1922	241	
Railroad land unsold on June 30, 1922	21,729	
Other private land, June 30, 1921	291,032	
Acreage service could supply, season of 1921		133,509
Acreage irrigated, season of 1921		123,000
Acreage cropped under irrigation, season of 1921		107,880
Value of irrigated crops, season of 1921		$10,963,410.00
Value of irrigated crops per acre cropped		$101.63
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$2,198,493.04	
Encumbrances, disbursements, and liabilities	1,125,630.21	
Unencumbered balance July 1, 1922		$1,072,862.83
Fiscal year 1923; amount specified in appropriation act		1,500,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$649,249.00	$11,005,460.84
Less—		
Funds advanced for construction	15,750.00	63,236.50
Water-right contracts—		
Project lands (130,939 acres)	38,135.89	7,129,798.19
Warren Act lands (approximately 107,912 acres)	4,550.00	2,403,932.00
Total	58,435.89	9,596,966.69
Balance	590,813.11	1,408,494.15

* Contra.

Summary of data for Yakima project to end of fiscal year 1922—Continued.

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$223,765.88	$1,873,320.40	$209,351.36	$1,989,215.23
Less—				
Charges billed or contracted	299,269.44	1,878,671.20	277,699.88	1,938,847.89
Penalties and discounts (net)	*1,100.80	4,467.27	2,618.44	4,496.92
Total	298,168.64	1,883,138.47	280,318.32	1,943,344.81
Balance	*74,402.76	*9,818.07	*70,966.96	45,870.42

	Reclamation fund.	Judgments, Court of Claims.	Increase of compensation.	Totals.
Investment to date:				
Disbursements and net transfers	$13,966,859.66	$71,999.46	$220,200.15	$14,259,059.27
Less collections	5,361,542.74			5,361,542.74
Net investment	8,605,316.92	71,999.46	220,200.15	8,897,516.53

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected, June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost:						
Funds advanced and unapplied cooperative credits	$15,750.00	$63,236.50	$15,750.00	$63,236.50		
Water-right charges	350,876.44	2,902,301.85	323,969.04	2,739,811.29	$26,446.87	$136,043.69
Total	366,626.44	2,965,538.35	339,719.04	2,803,047.79	26,446.87	136,043.69
Construction water-right charges paid in advance				3,589.60		
To return net operation and maintenance cost:						
Operation and maintenance charges:						
Project lands (130,939 acres)	259,272.30	1,855,716.89	240,555.37	1,721,753.80	25,660.27	108,302.82
Warren Act lands (approximately 107,912 acres)	18,604.46	83,131.00	12,489.49	77,000.00		6,131.00
Penalties and interest	7,527.01	29,111.85	7,527.01	29,111.85		
Total	285,403.77	1,967,959.74	260,571.87	1,827,865.65	25,660.27	114,433.82
Operation and maintenance charges paid in advance				143.39		
Revenues:						
Rentals of irrigating water	5,118.89	136,437.67	5,877.31	135,696.75		740.92
Rentals of power and light		3,635.33		3,635.33		
Rentals of grazing and farming lands	504.07	19,538.31	1,163.95	19,305.01		233.30
Total	5,622.96	159,611.31	7,041.26	158,637.09		974.22
Miscellaneous uncollected						1,019.77
Other miscellaneous collections			48,653.04	568,259.22		
Grand total collections			655,985.21	5,361,542.74		

ACTIVITIES DURING FISCAL YEAR.

STORAGE.

Construction on Tieton Dam consisted of excavation of outlets and diversion tunnel, and extension of the tunnel intake; excavation for the underground portion of the core wall; placing of core-wall concrete; stripping of dam site; excavation for spillway, and placing of dam embankment. Gravel, concrete cableway, power, and hydraulic sluicing plants were erected and placed in operation. Rock-fill embankment consisted of rock from tunnel and spillway excavation. Earth-fill embankment consisted of borrow pit material dumped from trestles located on the outer slopes of the dam and sluiced toward the core wall by hydraulic giants, thus grading the materials.

SUNNYSIDE DIVISION.

The operating season of 1921 extended from March 21 to October 31. Maintenance work consisted of removal of silt, moss, and weeds and miscellaneous repairs to canals and structures. Special items were the completion of the Mabton 6.40 sump and chute, repairs to Zillah wasteway, and cleaning of willows from Sulphur Creek wasteway. There were constructed 157 wooden and 96 concrete structures, 2 miles of laterals, three-fourths mile of wood flume, 1¼ miles of pipe line, and approximately 2 miles of gravel and rock riprap on the Main Canal.

Operation data, Sunnyside division, Yakima project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which the service was prepared to supply water	93,226	97,285	98,537	100,130	100,733	101,509
Acreage irrigated	73,000	80,500	84,650	90,000	93,610	94,500
Number of farms irrigated	2,682	2,720	2,780	2,810	2,905	3,065
Miles of canal operated	585	590	590	605	605	605
Water diverted (acre-feet)	349,262	385,179	415,097	421,364	417,522	440,348
Water diverted to land (acre-feet)	239,898	254,280	290,402	295,215	284,800	309,709
Per acre of land irrigated (acre-feet)	3.286	3.159	3.430	3.270	3.040	3.28

Settlement data, Sunnyside division, Yakima project.

Items.	1917	1918	1919	1920	1921
Total number of farms on project	2,740	2,780	2,810	2,905	3,065
Population	8,255	8,744	9,477	10,929	12,080
Number of irrigated farms	2,740	2,780	2,810	2,905	3,065
Operated by owners or managers	1,942	1,983	2,009	2,272	2,322
Operated by tenants	798	797	801	633	743
Population	8,255	8,744	9,477	10,929	12,080
Number of towns	13	13	13	11	11
Population	5,550	5,975	7,650	6,941	6,941
Total population of towns and on farms	13,805	14,719	17,127	17,870	19,021
Number of public schools	37	37	37	40	41
Number of churches	30	30	30	30	30
Number of banks	9	10	13	13	13
Total capital stock	$277,500	$275,000	$400,000	$380,000	$397,000
Total amount of deposits	$2,349,702	$2,642,851	$4,388,610	$2,695,848	$2,914,608
Total number of depositors	7,375	7,936	11,182	11,556	11,643

TIETON DIVISION.

In 1921 diversion of water from the Tieton River continued from July 1 to October 15, the first reduction below maximum carrying capacity of the Main Canal occurring on September 11. The irrigation season of 1922 began on April 23, about 10 days later than usual, owing to the late spring.

Maintenance work consisted of cleaning weeds and silt from 335 miles of canals and laterals comprising the entire distribution system down to each farm unit, as well as the repair and replacement of structures; 75 cubic yards of concrete were placed in division and measuring box structures, 2,000 linear feet of wood-stave flume were erected, and 4 miles of pipe lines, eliminating open ditches and small wooden flumes, were installed.

Operation data, Tieton division, Yakima project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	30,000	31,000	31,000	32,000	32,000	32,000
Acreage irrigated	23,000	25,400	26,400	27,000	28,000	28,500
Miles of canal operated	335	335	335	335	335	335
Water diverted (acre-feet)	74,936	80,377	90,280	98,223	96,506	100,844
Water served to land (acre-feet)	49,412	57,318	64,068	70,776	69,471	71,148
Per acre of land irrigated (acre-feet)	2.15	2.26	2.43	2.62	2.47	2.50

Settlement data, Tieton division, Yakima project.

	1917	1918	1919	1920	1921
Total number of farms on project	1,400	1,400	1,480	1,480	1,480
Population	2,150	2,150	2,850	3,314	3,457
Number of irrigated farms	1,190	1,280	1,253	1,340	1,300
Operated by owners or managers	726	820	903	1,048	1,010
Operated by tenants	464	460	350	292	290
Population	2,150	2,150	2,850	3,314	3,457
Number of towns	7	8	8	8	8
Population	20,500	21,850	23,000	23,000	23,000
Total population of towns and on farms	22,650	24,000	25,850	26,314	26,457
Number of public schools	10	10	10	10	10
Number of churches	3	3	3	3	4

WYOMING, RIVERTON PROJECT.

H. D. COMSTOCK, project manager, Riverton, Wyo.

The Riverton project lies in Fremont County, Wyo., northeast of Wind River and west of the Big Horn River. Adjacent towns on the Chicago & North Western Railway are Riverton and Shoshoni with estimated populations of 2,000 and 500. The source of water supply is Wind River. The irrigation season is from May 1 to September 30. The average altitude is 5,200 feet; the average annual rainfall is about 8 inches; the average maximum temperature is about 95° F.; and the average minumim temperature −27° F. The soil is a heavy loam. The principal products are alfalfa, cereals, sugar beets, potatoes; and the principal markets, Omaha, Denver, and local. The estimated duty of water is 2 acre-feet per acre per annum at the farm.

The flood waters of Wind River, Bull Lake Creek, and Dinwoody Creek will be stored in Pilot Butte, Bull Lake, and Dinwoody Reservoirs. The waters of Wind River will be diverted into the Wyoming Canal serving the entire project.

SUMMARY OF DATA FOR RIVERTON PROJECT TO END OF FISCAL YEAR 1922.

Areas:		
Irrigable acreage when project is complete		100,000
Public land withdrawn on June 30, 1922	69,000	
Indian land, June 30, 1922	1,000	
Private land, June 30, 1922	30,000	
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$856,994.49	
Encumbrances, disbursements, and liabilities	396,672.05	
Unencumbered balance July 1, 1922		$460,322.44
Fiscal year 1923, amount specified in appropriation act		925,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$308,934.69	$634,407.64
Balance	308,934.69	634,407.64

	Reclamation Fund.	Indian Funds.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$466,879.89	$359,192.00	$29,119.55	$855,191.44
Less collections	19,043.72	985.46		20,029.18
Net investment	447,836.17	358,206.54	29,119.55	835,162.26

Status of current accounts receivable as of June 30, 1922.

Miscellaneous uncollected	$523.13
Miscellaneous collections, fiscal year 1922	2,070.05
Total to June 30, 1922	20,029.18

ACTIVITIES DURING FISCAL YEAR.

On the Wyoming Canal one drag-line excavator was employed throughout the year working two shifts, and a second about half the year, also working two shifts. Approximately 600,000 cubic yards were excavated during the fiscal year.

Work on the Wind River diversion dam at the head of the Wyoming Canal was begun in July, 1921, and continued throughout the fiscal year, except as delayed by cold weather. Approximately 14,000

cubic yards were excavated for this structure and 3,560 cubic yards of concrete were placed. The earth dike at the south end of the dam was begun in the spring of 1922 and approximately 50,000 cubic yards of embankment were placed.

Settlement data, Riverton project.

Item.	1919	1920	1921
Number of towns	2	2	2
Population	2,500	2,500	[1] 2,500
Number of public schools	2	2	2
Number of churches	7	7	7
Number of banks	5	5	5
Total capital stock	$110,000	$135,000	$135,000
Amount of deposits	$1,200,000	$1,500,000	[1] 900,000
Number of depositors	2,700	2,600	[1] 2,200

[1] Estimated.

WYOMING, SHOSHONE PROJECT.

J. S. Longwell, project manager, Powell, Wyo.

The Shoshone project is located in Park and Big Horn Counties, Wyo., and Carbon County, Mont. The principal project towns are Powell and Deaver. Transportation facilities are provided by the Chicago, Burlington & Quincy Railroad. The water supply is obtained from the Shoshone River; rainfall averages 5.4 inches; the average elevation is 4,500 feet above sea level; temperature records show a mean maximum of 98.3° F. and a mean minimum of −19.4° F. Agricultural products consist principally of alfalfa, wheat, oats, potatoes, and sugar beets. The average duty of water is 2.29 acre-feet per acre irrigated.

Storage is provided in Shoshone Reservoir, created by the Shoshone Dam, to supplement direct flow rights from the river. The irrigation plan contemplates three diversions from the river. The highest diversion, that for the proposed Heart Mountain division, will be about 100 feet above stream bed at the Shoshone Dam. The second diversion, in operation since 1908, at Corbett Dam 8 miles below Cody, is one of 1,000 second-feet for the irrigation of lands in the Garland and Frannie divisions. The third diversion, not yet constructed, will be 16 miles below Cody, for the Willwood division.

SUMMARY OF DATA FOR SHOSHONE PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		[1] 139,000
Public land entered to June 30, 1922	64,630	
Public land open to entry on June 30, 1922	1,395	
Public land withdrawn on June 30, 1922	59,870	
State land unsold on June 30, 1922	5,395	
Railroad land unsold on June 30, 1922	987	
Other private land, June 30, 1922	6,723	
Acreage service could supply, season of 1921		65,826
Acreage irrigated, season of 1921		45,420
Acreage cropped under irrigation, season of 1921		43,880
Value of irrigated crops, season of 1921		$712,540
Value of irrigated crops per acre cropped		$16.24
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations	$1,812,549.40	
Encumbrances, disbursements, and liabilities	892,394.18	
Unencumbered balance July 1, 1922		$920,155.22
Fiscal year 1923, amount specified in appropriation act		975,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$763,693.68	$7,479,857.32
Less—		
Funds advanced and unapplied cooperative credits	1,000.00	1,000.00
Water-right contracts, project lands (66,441.58 acres)	312,630.24	4,899,204.06
Total	313,630.24	4,900,204.06
Balance	450,063.44	2,579,653.26

	Calendar year 1921.	To Dec. 31, 1921.	Fiscal year 1922.	To June 30, 1922.
Net operation and maintenance cost	$81,869.29	$527,926.30	59,408.07	557,364.44
Less:				
Charges billed or contracted	121,066.46	535,962.95	121,137.95	535,822.00
Penalties and discounts (net)	*578.13	*2,988.14	*78.70	*3,511.63
Total	120,488.33	532,974.81	121,059.25	532,310.37
Balance	*38,619.04	*5,048.51	*61,651.18	25,054.07

[1] Does not include 90,000 acres in the Oregon Basin and 30,000 acres in Chapman Bench and Sand Coulee division for which lands have been withdrawn, but the construction of which have not yet been approved. See irrigable land table in appendix.

Summary of data for Shoshone project to end of fiscal year 1922—Continued.

	Reclamation fund.	Judgments Court of Claims.	Increase of compensation.	Total.
Investment to date:				
Disbursements and net transfers	$8,171,298.68	$322,164.67	$129,444.58	$8,622,907.93
Less collections	1,191,754.26			1,191,754.26
Net investment	6,979,544.42	322,164.67	129,444.58	7,431,153.67

* Contra.

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected June 30, 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year, 1922.	To June 30, 1922.		
To return net construction cost:						
Funds advanced and unapplied cooperative credits	$1,000.00	$1,000.00	$1,000.00	$1,000.00	.....	.....
Water-right charges	98,355.83	684,845.14	39,582.12	582,324.65	.....	$102,520.49
Total	99,355.83	685,845.14	40,582.12	583,324.65	.....	102,520.49
Construction water-right charges paid in advance	.....	.....	.....	392.13	.....	.....
To return net operation and maintenance cost:						
Operation and maintenance charges, project lands (66,441.58 acres)	121,137.95	535,822.00	44,705.26	381,146.97	$9,356.06	145,318.97
Penalties and interest	1,318.41	5,844.43	1,318.41	5,844.43	.....	.....
Total	122,456.36	541,666.43	46,023.67	386,991.40	9,356.06	145,318.97
Operation and maintenance charges paid in advance	.....	.....	.....	197.01	.....	.....
Revenues:						
Rentals of irrigating water	1,672.36	11,518.77	1,604.80	11,050.59	.....	468.18
Rentals of power and light	812.70	812.70	494.10	494.10	.....	318.60
Rentals of grazing and farming lands	70.75	7,270.32	65.94	6,965.07	.....	305.25
Total	2,555.81	19,601.79	2,164.84	18,509.76	.....	1,092.03
Miscellaneous uncollected	.....	.....	.....	.....	.....	1,717.25
Other miscellaneous collections	.....	.....	10,056.10	202,339.31	.....	.....
Grand total collections	.....	.....	98,826.73	1,191,754.26	.....	.....

ACTIVITIES DURING FISCAL YEAR.

Power plant.—Work on the Shoshone power plant, located at the Shoshone Dam, was practically completed during the year, the principal remaining item being the installation of the 36-inch balanced needle valve at the end of the by-pass pipe. Two 1,000 kilovolt amperes units were installed. The transmission line designed to operate at 33,000 volts was constructed, extending through the Heart Mountain, Garland, and Frannie divisions, and will furnish power for construction and drainage work and for domestic and municipal purposes. The power plant and transmission line were placed in operation April 21, 1922.

Frannie division.—Structures for the 5,000 acres opened to settlement in September, 1921, were completed. Work was done on

drainage by three drag lines during the 1921 season and by two drag lines during the 1922 season until the fore part of June. Work was then undertaken under a supplemental construction program for which the water users had voted a charge of $30 per acre. Equipment on hand was being electrified and additional electrical equipment transferred to the work so that an extensive program can be carried out. During the year 5.85 miles of open drain were constructed, continuing work on the Mantua Flat and the area west of Deaver and beginning new work northwest of Deaver and on the deepening of the reach of Sage Creek passing through the division. A deep drain for unwatering two closed contours near Mile Post 5 of the Cody Branch of the Chicago, Burlington & Quincy Railroad was constructed. These contours and irrigable area tributary thereto embrace an area of 950 acres of vacant public lands under constructed ditches but not yet opened to entry because of lack of drainage. This drain will also furnish subsurface drainage outlet for that area.

Garland division.—Drainage work was carried on principally with four drag lines during the 1921 season and with two draglines during the 1922 operating season. The Austin trencher constructed 0.34 mile of closed drain; 17.21 miles of open drain were constructed in the North Garland and Dry Lake areas and in the area northwest of Garland.

Operation data, Shoshone project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service is prepared to furnish water	42,623	43,265	55,296	56,119	65,890	65,826
Acreage irrigated	29,977	32,984	38,282	41,641	45,650	45,420
Miles of canal operated	266	286	381	415	458	460
Water diverted (acre-feet)	125,622	128,629	162,463	199,061	187,329	221,419
Water delivered to land (acre-feet)	70,247	68,730	84,378	117,459	113,065	112,324
Per acre of land irrigated (acre-feet)	2.34	2.10	2.29	2.81	2.50	2.47

Settlement data, Shoshone projcct.

Item.	1916	1917	1918	1919	1920	1921
Total number of farms on project	650	646	830	823	1,009	1,005
Population	1,825	1,941	2,320	2,481	2,730	2,686
Number of irrigated farms	593	621	750	803	910	935
Operated by owners or managers	430	467	616	619	695	646
Operated by tenants	160	154	134	184	215	289
Population	1,825	1,941	2,320	2,481	2,730	2,686
Number of towns	3	4	5	5	5	5
Population	630	1,082	1,170	1,395	1,345	1,541
Total population on farms and in towns	2,455	3,023	3,490	3,876	4,075	4,227
Number of public schools	6	8	10	11	12	7
Number of churches	7	7	8	8	8	8
Number of banks	3	3	5	5	6	5
Total capital stock	$60,000	$60,000	$75,000	$110,000	$125,000	$110,000
Amount of deposits	$300,000	$488,000	$654,000	$955,000	$644,000	$543,000
Number of depositors	1,290	1,500	1,875	2,500	2,605	2,400

SECONDARY PROJECTS.

COOPERATIVE INVESTIGATIONS AND PROPOSED PROJECT EXTENSIONS.

NOTE.—A description of secondary projects and investigations carried on under cooperative contracts can be found in previous annual reports with brief descriptions and complete references on pages 393 to 453 of the Twentieth Annual Report. The following discussions are limited to those projects on which work was done during the fiscal year ending June 30, 1922.

ARIZONA.

BOULDER CANYON RESERVOIR INVESTIGATIONS

Investigations were carried on under cooperative contracts with the Coachella Valley County water district, Imperial irrigation district, city of Los Angeles, and city of Pasadena. Studies of water supply, irrigation storage, flood detention, silt storage, and power development were continued, including preliminary designs and cost estimates of reservoirs of various capacities in combination with varying amounts of power development and of reservoirs to serve as flood-detention basins only. Drilling operations at Boulder Canyon were limited to the upper (C) dam site. Forty-nine holes were drilled, making a total of 79, of which 67 are located at the upper dam site and 12 at the lower (A) site. The rock was in all cases found to be a fine-grained granite of excellent quality, although jointed to a considerable extent. The conclusion reached from the previous season's work, that bed rock would be found at depths not exceeding 140 feet below low-water surface, was not changed by this year's work. There are two dam sites in Black Canyon, the entrance to which is about 18½ miles by river below the entrance to Boulder Canyon. Field investigations were limited to the upper site, located one-fourth mile below the canyon entrance. A drill camp was opened early in January. It was necessary to build three-fourths mile of road and 1½ miles of trail in order to reach the point selected for drilling. A drill barge and small boats were built, equipment assembled, and drilling started on February 22. A line of holes was drilled across the river to develop the cross section of the river channel. In general the river trench is filled with gravel and boulders, overlaid with about 20 feet of sand. Eight holes were drilled in the river and in the deepest one bedrock was reached at a depth of 62 feet below low-water surface. However, the investigations have not been carried far enough for it to be said that this is the maximum depth to bedrock at the upper dam site. The deepest hole drilled in the river penetrated bedrock 53 feet. In order to ascertain the character and quality of the rock at greater depths than reached by the river holes, a land hole was drilled on the Nevada side of the river to a depth of 259 feet, 193 feet below low-water surface. In all cases the rock was found to be a lava, termed quartz latite, in the form of a flow breccia, by Dr. F. L. Ransome, of the United States Geological Survey.

CALIFORNIA.

IMPERIAL VALLEY PROJECT.

(See also Arizona, Boulder Canyon investigation.)

A complete report on investigations carried on pursuant to the act of Congress approved May 18, 1920 (41 Stat. 600) was issued by the director under date of February 4, 1922, and subsequently published as Senate Document No. 142, and later by the Committee on Irrigation of Arid Lands of the House of Representatives. An open hearing was held by the Secretary of the Interior at San Diego, Calif., on December 12, 1921, at which the problems of the Imperial Valley were publicly discussed by the interested parties. The Colorado River Commission held numerous hearings, but final conclusions had not been announced at the end of the fiscal year.

OWENS VALLEY PROJECT.

Detail investigations under contract with the city of Los Angeles were completed and final report was approved by the director on November 14, 1921. The conclusions reached were to the effect that a project of 50,000 acres is feasible in the Owens Valley at an expenditure of $2,000,000 towards the cost of necessary diversion works for the water supply from Mono Basin.

SHASTA VALLEY PROJECT.

In 1921 the Klamath-Shasta Valley irrigation district was formed, embracing about 190,000 acres in the Shasta Valley, Calif. A cooperative agreement was made between the United States Reclamation Service, the State of California, and the district, providing for an investigation and surveys to determine the feasibility and probable cost of a project, including storage and diversion of the waters of the Klamath River and its tributaries for irrigation of lands within the district and for power development. Under this agreement the Reclamation Service, the State, and the district furnish funds to cover the cost of the investigations. Canal surveys were begun in April, 1922.

STONY GORGE EXTENSION OF THE ORLAND PROJECT.

Stony Gorge.—Following the drought season of 1920, which demonstrated that development of storage at Stony Gorge was not feasible owing to insufficient run-off during seasons of extreme drought, further consideration of storage at this point was abandoned and attention directed toward Millsite, 9 miles below Stony Gorge and 20 miles west of Orland.

Millsite.—Investigations regarding development of 115,000 acre-feet of storage at Millsite as a means of insuring the Orland project against a serious water shortage in drought seasons were undertaken at the request of the directors of the Orland Unit Water Users' Association, who have agreed to repay the cost of the investigation, not exceeding $10,000, by increased operation and maintenance charges if no construction is undertaken. A detailed topographic survey of the dam site and an extension of the reservoir topography were made and diamond drilling at the dam site was in progress at the close of the fiscal year.

COLORADO.

ORCHARD MESA PROJECT.

This project embraces 10,000 acres of land on the south side of the Colorado River, between Palisade and Grand Junction, Colo., and included within the Orchard Mesa irrigation district. Arrangements have been completed for the inclusion of this district as a division of the Grand Valley project. On February 18, 1922, a contract was entered into between the United States, the Grand Valley Water Users' Association, and the Orchard Mesa irrigation district providing for the expenditure of not to exceed $1,000,000 for the reconstruction of the irrigation system, construction of a drainage system, and settlement of outstanding indebtedness.

IDAHO.

BOISE PROJECT EXTENSION: BLACK CANYON DIVISION.

The Black Canyon division comprises an area of 56,000 acres, exclusive of the Notus division (supplied by the Notus Canal), which has been completed. This extension is located between the Boise and the Payette Rivers in Canyon and Gem Counties, Idaho. A plan was developed under which the United States would build the Black Canyon diversion dam in the Payette River, which would supply the Emmett irrigation district and eliminate a long stretch of hazardous canal. The dam would also divert water as well as furnish power for the Black Canyon division. A contract providing for the construction of the diversion dam was executed by the United States and the Emmett irrigation district under date of November 8, 1921. The contract provides that the district will pay the full cost of the dam, with a further provision that if the dam is used for diverting water to the Black Canyon division it will bear one-half of the cost. Purchase of right of way for the dam has been made. Some detail surveys, as well as a limited amount of testing for bedrock, were done during the year.

DUBOIS PROJECT.

In June, 1922, surveys were started to determine the feasibility of diverting from the South Fork of Snake River, thus making available additional water resources and storage possibilities. As the surface waters of this locality drain into Mud Lake and Lost River sinks, which have no surface outlet, the study of the underground movement of water in this vicinity being made by the United States Geological Survey in cooperation with the State of Idaho will have an important bearing upon the feasibility of this project. These investigations will be made under a cooperative agreement by which one-half of the cost will be advanced by those interested and one-half by the Reclamation Service.

PORTNEUF PROJECT.

This project is located in the southeastern part of Idaho and was covered by a preliminary survey in 1908. It includes about 25,000 acres of land in the vicinity of Chesterfield and Bancroft and about 40,000 acres between Pocatello and American Falls. On account of

its dependence upon the irrigation works of the Fort Hall Indian project, it has, in recent years, been included in the Greater Fort Hall project. This project contemplates the utilization of the Blackfoot Reservoir of the Indian Service on highlands in the Blackfoot and Portneuf River watersheds and replacing the storage so used with equivalent amounts from the Jackson Lake Reservoir, the Jackson Lake storage rights being obtained by acquiring rights in the proposed American Falls Reservoir and effecting an exchange with the present owners of storage rights in the Jackson Lake Reservoir.

MOUNTAIN HOME PROJECT.

This project is located in Ada and Elmore Counties, in southwestern Idaho, and contains a gross area of 700,000 acres, of which 420,000 acres are classed as irrigable. Although a partial water supply has been considered from the Boise, Salmon, and Payette Rivers, the entire area could be irrigated from the Snake River, if fully regulated by reservoirs at American Falls and other sites. A canal would divert on the north side of the Snake River at Milner Dam; the length of the canal would be 112 miles to the head of the irrigable area, which has an unusually smooth and even surface, over which the water could readily be distributed. If the present plan of supplying storage water to supplement old rights in the upper Snake River Valley is fully carried out, it is estimated that there will be only sufficient water supply in Snake River economically to irrigate about 400,000 acres of new land, and the proposed extension of the Minidoka project will take over 100,000 acres of this, so that it is possible to reclaim only about 300,000 acres of the proposed Mountain Home project, or some other equal area. A preliminary line from Milner Dam and Mountain Home was run in 1918 which has been supplemented during the past year by detailed topography taken over about 20 miles of the most difficult country to be traversed by the main canal. The most recent surveys are being conducted under contract with the Boise Chamber of Commerce.

HANSEN BUTTE PUMPING PROJECT.

This project is situated in Twin Falls County in south central Idaho, on the south side of Snake River above the Twin Falls Canal, and extends from Milner nearly to Rock Creek 15 miles west. The irrigable land is mostly in private holdings. It can be covered by pumping from the Twin Falls Canal or from Snake River above Milner Dam. The area that could be covered depends upon the height to which water is lifted; up to 40,000 acres can be served by a pumping lift of 150 feet. The project has been under consideration for a number of years. Recently a private company has installed a small pumping plant with a lift of 65 feet and a canal covering about 7,000 acres. The Murtaugh irrigation district has been organized recently to install another pumping plant with a lift of 150 feet to cover between 30,000 and 35,000 acres. Bonds to the amount of $3,700,000 were voted in the spring of 1922. The source of water supply is Snake River, and storage will have to be provided either at American Falls or some other reservoir site. The district plans to secure power for pumping by combining the power available at the mouth of Rock Creek and at Auger Falls power site on Snake River.

MINIDOKA PROJECT EXTENSION: NORTH SIDE PUMPING DIVISION.

This division lies to the north and west of the divisions of the Minidoka project which are at present in operation in Minidoka and Jerome Counties in southern Idaho. It contemplates the development of 115,000 acres of irrigable land, practically all of it being public land withdrawn from entry. The source of water supply is Snake River, and storage will be required at American Falls or some other site. A hydroelectric power plant will be necessary to generate power for the operation of pumping plants. Water will be pumped from Snake River above the present Minidoka Dam. The maximum lift required is 120 feet. Preliminary surveys were made in 1908, 1912, and 1913. More detail surveys were begun in 1918 and the field work on these has been completed.

LAKE WALCOTT PUMPING DIVISION.

This proposed division lies along the south shore of Lake Walcott, in Cassia County, Idaho, the west edge being about a mile east of Minidoka Dam. The plan calls for the pumping of water from Lake Walcott with a maximum lift of 30 feet above the lake for the irrigation of about 2,000 acres. The water supply is from Snake River supplemented by storage to be obtained at Jackson Lake, American Falls, or some other reservoir site on Snake River. Power required for pumping can be developed at Minidoka Dam or at American Falls. The land is practically all public land withdrawn from entry.

AMERICAN FALLS RESERVOIR.

The American Falls reservoir site is located in southeastern Idaho in the vicinity of American Falls, Pocatello, Blackfoot, and Aberdeen. The dam would be located at American Falls immediately above the point where the Oregon Short Line Railroad crosses Snake River. A 100-foot dam would impound 3,000,000 acre-feet and make available for irrigation the entire resources of Snake River. The estimated capacity to which the reservoir should be built varies from 1,500,000 to 3,000,000 acre-feet, depending upon the location of future development of new lands. The geological conditions of the dam and reservoir site are considered favorable. Water users' organizations, representing about 500,000 acres of land, have signed contracts for storage space in the reservoir. Other contracts are awaiting the completion of the legal steps necessary to permit the interested organizations to sign the contracts and finance their obligations. Investigations including topographical surveys, classification and appraisal of lands in the reservoir site, planning a new townsite for American Falls, and drilling the dam site have been continued. Title has been obtained to practically all of the dam site. Condemnation proceedings have been carried through on several tracts. Funds have been made available for purchasing a part of the land in the reservoir site.

MONTANA.

CLARK FORK PROJECT.

This project, located near the Montana-Wyoming boundary line, contemplates the irrigation of lands in Carbon and Stillwater Counties, Mont., and Park County, Wyo. Investigations consisted of a classification of project lands, preliminary survey of various canal lines, examination of storage sites, water supply studies, and estimates of cost. Two schemes of development were considered: (1) The irrigation of all lands by diversion from the Clark Fork River with a long gravity supply canal extending the length of the valley and supplying water to some 60,800 acres, and (2) the irrigation by direct diversion from the Clark Fork River of the upper lands of the project as far as Grove Creek and the irrigation of the remaining lower lands by water diverted from Rock Creek, near Red Lodge, Mont., replacing the flow of Rock Creek, which is fully appropriated, by water obtained from a proposed storage reservoir on East Rosebud River. The investigations show that in either case storage will be required on the Clark Fork River to augment the supply for the project land to be irrigated from that stream. A storage reservoir having a capacity of 100,000 acre-feet, with a depth of water of 140 feet at the dam site, was investigated on Sunlight Creek, a tributary of the Clark Fork. The conclusions were that the cost per acre would be very high for either plan, and that the quality of the land within the proposed project would not justify the expense necessary to construct the system.

CUT BANK PROJECT.

This project involves the irrigation, by diversion from Cut Bank Creek, of approximately 14,400 acres in the vicinity of Cut Bank, Mont., all in private ownership, together with 9,000 acres included within the boundaries of the Blackfeet Indian Reservation. A contract was entered into with the Cut Bank irrigation district June 13, 1921, for financing an investigation to determine the feasibility and probable cost of irrigating the land outside of the Indian Reservation. During the fall of 1921 the project manager at Browning made preliminary surveys of the irrigable area and several possible reservoir sites, a study of the water supply, and an estimate of cost of a distributing system and storage works. It was concluded that sufficient water is available for a complete supply for reservation lands and a good supply for the lands under consideration not taking into account any other rights; that storage works will be necessary, and that a canal and lateral system can be constructed without engineering difficulties or heavy construction at a reasonable cost, but that necessary storage works will be expensive. The report of the investigations was approved by the director April 24, 1922.

KALISPELL (HELENA FLATS) PROJECT.

This proposed project is located in northwestern Montana in Flathead County, and lies directly north of Kalispell. There is an area of about 14,000 acres of irrigable land which may be watered from Flathead River without need of storage, or Whitefish River with storage in Whitefish Lake. In addition to these sources of

supply there is an underground flow from which the southern part of the tract could be irrigated by pumping from wells with a lift of about 10 feet which would be feasible for irrigation use whenever electric power, which is now available in the vicinity of Kalispell, is distributed to the individual farms. As these farms are generally partly in brush and timber not yet cleared, this development is probably the most feasible for such lands. The investigations made were not sufficient to warrant definite conclusions, but further studies are believed advisable.

LITTLE BITTERROOT (CAMAS) PROJECT.

This project is located along the Little Bitterroot River below the Camas division of the Flathead project and east of Camas, Mont. The lands were formerly a part of the Flathead project and were released at the request of the unitholders who believed that the artesian well supply would be sufficient for irrigation of their lands. Investigations were made in 1921 by engineers of the Flathead project under contract with the Farmers' Development Association of Camas, Mont. About 2,000 acres of land lying in a narrow strip along the banks of the river may be irrigated by the construction of a canal 18 miles long excluding laterals. The water supply is dependent on storage of the winter and spring run-off of Little Bitterroot River and Sullivan Creek below the storage reservoirs of the Flathead project to supplement the flow of private artesian wells. A site for a storage reservoir was found on the river immediately above the proposed diversion for the canal which will provide sufficient storage for the project. The estimated cost of construction of the project is reasonable, and the lands are of good quality adapted to raising of alfalfa and other hay crops, grains, small fruits, etc. All of the lands are in private ownership and a large percentage now under cultivation.

TALLY LAKE PROJECT.

These investigations, which were carried on under contract with the Tally Lake irrigation district, dated November 28, 1919, were completed and final report was approved by the director on September 26, 1921.

NEBRASKA.

LOWER PLATTE PROJECT.

The Lower Platte project is located in the south-central part of Nebraska, in Lincoln, Dawson, and Buffalo Counties, on both sides of the Platte River from which it is contemplated to derive the water supply. The proposed irrigable lands extend along the South Platte and Platte Rivers, from Sutherland to Lexington on the south side, a distance of 84 miles; from North Platte to Shelton, on the north side, a distance of 118 miles. The net irrigable acreage under the proposed canals of this project in its ultimate development embraces 310,000 acres, exclusive of the 135,000 acres gross under the present operated canals. On August 24, 1921, a contract was drawn up and signed between the Lower Platte Irrigation Association and the United States Reclamation Service whereby it was agreed to make

an engineering investigation to determine the cost and feasibility of this project, the cost of the work to be limited to $30,000, two-thirds to be borne by the association and one-third by the Reclamation Service. Field work on the canal location and reservoirs was commenced on October 20, 1921, and completed on May 1, 1922. As the successful irrigation of these lands depends on storage water to be available during the months of July and August, when the flow in the Platte River is inadequate to supply even the existing rights, a system of inland reservoirs was surveyed to impound the flood waters of this river. Drainage investigations were made over the low-lying lands, between Maxwell and Kearney, on the north side of the Platte River, where there are approximately 60,000 acres requiring drainage at the present time. Nearly all this area is under existing canals in operation at the present time. The project presents a number of alternative schemes of irrigation and development making it necessary to look into them all for comparative costs and for a proper plan of development by successive stages, finally reaching the ultimate completion. In conjunction with the irrigation possibilities, the development of hydroelectric power is being investigated. As the report has not been completed the final recommendations and conclusions can not be given.

NEVADA.

UPPER OWYHEE PROJECT.

A cooperative investigation with the State of Nevada was conducted in September, 1921, to determine the feasibility of diverting water from the Owyhee River to the Little Humboldt drainage basin. A rough field inspection indicated probable high costs and lands of only fair quality. These factors, together with a doubtful water supply, led to a decision to defer further work until more extended records of run-off shall be available.

NEW MEXICO.

CARLSBAD EXTENSION: PECOS RIVER INVESTIGATIONS.

Contracts were entered into between the United States and the Pecos Water Users' Association, dated September 22, 1920, and May 2, 1921, for financing an investigation to determine the cost and feasibility of impounding flood waters for the irrigation of 20,000 acres of new land in the Pecos Valley near Carlsbad, N. Mex., supplying storage for the Fort Sumner irrigation district; and for additional storage for the present Carlsbad project, which is necessary if shortages are to be avoided due to the silting up and heavy leakage from McMillan Reservoir. In 1921 a field examination was made; data were assembled and a report on water supply was submitted May 28, 1921. In August of the same year a field party completed topographic surveys of the Alamogordo Reservoir and two sites for a dam. Under date of September 2, 1921, the designing engineer submitted a preliminary design and estimate of cost of the Alamogordo Dam. In December, 1921, N. H. Darton, geologist, United States Geological Survey, made field examinations of the No. 3 and the Alamogordo Reservoir sites, and in January, 1921, submitted preliminary reports

on the geology of these sites and recommended that borings be made at the dam sites to determine the underground formations. The cores and samples recovered from the borings were treated chemically at Washington. Under date of May 31, 1922, he submitted a supplemental report on the Alamogordo Reservoir which in part reads as follows: "These results (speaking of the borings) indicate that the underground conditions at the dam site are entirely favorable to sustain the dam and retain the water." His opinions on the underground condition for a dam at the No. 3 site have not yet been submitted. Estimates of cost for an enlarged project are now in course of preparation based on surveys made by the original owners of the Carlsbad project at its inception and revised by the service in 1915. Final conclusions as to the feasibility of the project can not be drawn until the receipt of the geological report on the practicability of dam construction at the No. 3 site.

MIDDLE RIO GRANDE PROJECT.

Under date of May 31, 1922, a contract was executed by the Rio Grande Survey Commission of New Mexico, providing funds for the compilation of data secured by the State and from other sources on the drainage situation in the Rio Grande Valley between San Marcial and White Rocks Canyon and facilities for storage and diversion of water for irrigation of these lands after drainage. Maps have been completed of seeped areas showing topography and ground water elevations preliminary to a detail study and report on the situation and estimate of cost of reclamation of these lands by drainage and irrigation.

OREGON.

BAKER PROJECT.

Under date of October 15, 1921, the Baker Chamber of Commerce of Baker, Oreg., executed a contract providing funds for a review of the engineering data in the hands of the Powder River Land & Irrigation Co., augmented by field surveys, to secure additional data on the feasibility and cost of irrigation of about 30,000 acres of new lands and supplemental supply for about 7,500 acres of land heretofore irrigated but having an insufficient water supply during the latter part of the irrigation season, by storage and diversion of the waters of the lower Powder River. Surveys were made for relocation of about 2½ miles of the main line of the Oregon-Washington Railroad & Navigation Co. and 1½ miles of the old Oregon Trail now used as a State highway, both of which interfere with the storage capacity required in the proposed Thief Valley Reservoir. Survey was made of an alternate dam site for the Thief Valley Reservoir about 2½ miles below the dam site heretofore investigated by the company, and although a dam at this site is about 25 feet higher the site appears to be more favorable and by its location about 3 miles of main canal construction over rough topography is avoided and the storage capacity is increased from 130,000 to 146,000 acre-feet. The company's main canal was located through the canyon on the south side of the river but an alternative line on the opposite side shows a less total length and involves less heavy construction. Report on surveys and estimated cost was issued in April, 1922, which shows the probable

cost per acre to be high; the report was under review at the end of the fiscal year by a board of engineers designated for such purpose. Further work will depend on the final decision as to feasibility of the project. At the close of the fiscal year a geological examination of the No. 2 Dam site by A. C. Spencer of the United States Geological Survey was in progress and plans for drilling the site, if favorable report is received, were under way.

DESCHUTES PROJECT.

Following preliminary investigations and surveys in 1921 a board reviewed the proposed project in connection with the use of the waters of the Deschutes River and issued a report dated August, 1921; after review of the conditions in the field by the director, it was decided that owing to local differences it would not be practical to secure a reduction of the large private holdings in the valley and agreement of private interests and further work on the project was indefinitely postponed. A summary of the engineering data secured and final report on the project were compiled for future reference under date of April, 1922.

OWYHEE PROJECT.

A contract was entered into with the State of Oregon under date of May 17, 1921, for a complete investigation of this project. Considerable field work was done during the summer of 1921, estimates were prepared, and a report was submitted which was approved by the director under date of February 28, 1922. This project is located in Malheur County, in eastern Oregon, and Owyhee County in southwestern Idaho. The project includes about 132,000 acres on the west and south side of Snake River, north and south of the Owyhee. It extends from the vicinity of Ontario on the north far enough south to include the 30,000 acres in the Gem irrigation district. About 39,000 acres covered by the proposed plan are now covered by pumping. The present plan provides for storage at Duncan Ferry site, located on the Owyhee River about 110 miles from its mouth. A diversion dam is to be located about 15 miles above Mitchell Butte, 250 feet above low water level, with the main canal starting from the level of the diversion dam crest. A number of tunnels will be necessary.

UMATILLA PROJECT EXTENSIONS.

Stream measurements for the purpose of securing a more reliable estimate of the available water supply were continued.

OREGON-CALIFORNIA.

KLAMATH PROJECT: HORSEFLY STORAGE.

The Horsefly Reservoir site is located on Miller Creek, a tributary of Lost River. This reservoir will be used to prevent water flowing into Tule Lake and to provide a stored water supply for about 14,000 acres in Langell Valley. The reservoir will permit the reclamation of additional lands in Tule Lake and will also afford protection against resubmergence. The Langell Valley lands are prac-

tically all in private ownership; those in Tule Lake are in public ownership. During 1921 preliminary designs were prepared for three types of dam. The capacity of the reservoir will be about 90,000 acre-feet.

KLAMATH PROJECT: LANGELL VALLEY DIVISION.

This division comprises an irrigable area of about 24,000 acres which has been included in the Langell Valley irrigation district; about 10,000 acres can be irrigated from the Clear Lake Reservoir and about 14,000 acres from the proposed Horsefly Reservoir. During 1921 investigations were made for a diversion dam on Lost River and for a canal system to serve the lands irrigable from the Clear Lake Reservoir. On March 27, 1922, a joint contract was executed with the Langell Valley and Horsefly districts, which provides for the construction of irrigation works to the extent of $368,000, and for the sale of Clear Lake storage at the rate of $12.50 per acre for the irrigation of 8,300 acres. Practically all of the lands are in private ownership. Final surveys and other investigations for construction were begun early in 1922. Construction of the diversion dam and canal will be begun shortly after July 1, 1922. These should be completed prior to June 30, 1923.

KLAMATH PROJECT: PUMPING DIVISION.

The lands included in the pumping division have a total area of about 20,000 acres. There are 14 separate areas adjacent to project canals; these range in size from about 200 to 6,000 acres. The proposed lifts are from 15 to 70 feet; all of the lands are in private ownership. Some of the areas have been formed into irrigation districts; others propose to form districts for the purpose of contracting with the United States for the delivery of water. During the past year the United States replaced an old timber flume on the C Canal with a flume of reinforced concrete; the United States also constructed the C–G Canals. In both of the above structures capacity has been provided for the lands in the pumping division. Contracts are pending for capacity in the main canal and enlargement of the branch canals for use of the districts, the districts to finance and construct the required pumping plants and distribution system.

SOUTH DAKOTA.

CHICKEN CREEK RESERVOIR.

Report on the proposed storage for lands under the Red Water Canal and above the Belle Fourche project storage was submitted to the board of directors of the Belle Fourche Valley Water Users' Association on June 27, 1921, at which time the board passed a resolution deferring further action on securing a supplemental water supply for lands under the inlet canal and Johnston lateral. This request was approved by the director on July 22, 1921, and no further work has therefore been done except keeping record of water supply available for such storage.

TEXAS.

LOWER RIO GRANDE PROJECT.

At the request of the Lower Rio Grande Water Users' Association and a number of the water improvement districts the Reclamation Service reviewed a scheme proposed for the irrigation of lands above Weslaco. The plan suggested provided for a single pumping plant located a few miles below Rio Grande City to deliver water into a desilting basin, to be formed by dikes and a high canal bank. From the lower end of this basin the cleared water was to be delivered to present distributing systems of the various districts through a feeder canal. The maximum area that could be supplied by the proposed works is approximately 166,000 acres, of which 85,700 acres are now irrigated. No surveys of proposed canal lines, settling basin, or pump sites had been made or any designs for structures and mechanical equipment prepared, so no reliable estimate of costs could be determined, but rough calculations indicated that they would be comparatively high. From the best information available, it appeared that the probable life of the proposed desilting basin would be too short to warrant the indicated construction costs and that the saving in operating expenses would not be enough to pay the interest on the bonds that would have to be issued. For these reasons, and on account of the unsettled condition of water rights in the lower Rio Grande Valley, it was concluded that the "associated districts" would not be justified, at this time, in carrying out the plan proposed.

LOWER RIO GRANDE VALLEY DRAINAGE AND FLOOD CONTROL.

The investigations undertaken under the contract with the Rio Grande Valley Chamber of Commerce were continued. The work included additional topographic surveys, tabulation and analysis of available data, establishing gaging stations and preparing comprehensive maps of the area subject to floods, showing natural drainways and possible locations for artificial outlets. A reconnaissance was made on the Mexican side of the river from Reynosa to the Gulf to determine irrigation possibilities, the extent of overflow lands, and possible flood outlets. Investigations were still in progress.

RED BLUFF RESERVOIR.

A contract was entered into May 31, 1922, between the United States and the Pecos Valley Water Users' Association of Texas for financing a geological examination of the Red Bluff Reservoir site situated on the Pecos River about 3 miles above the New Mexico-Texas State line. A field examination of the reservoir was made by N. H. Darton, geologist, United States Geological Survey, in December, 1921. In January, 1922, he submitted a preliminary report recommending the drilling of two holes at the dam site to determine the underlying formation. The drilling of these two holes was completed June 21, 1922, and the cores and samples recovered from them were sent to the United States Geological Survey, Washington, for chemical treatment. The boring of additional holes was in progress.

UTAH.

CASTLE PEAK PROJECT.

Run-off records for securing water-supply data were continued.

GREEN RIVER PROJECT.

This project was investigated under a cooperative contract dated May 17, 1921, between the United States and the Salt Lake City Commercial Club and Chamber of Commerce. Field work was initiated in May, 1921, and report rendered and approved by the director January, 1922. Stadia traverse surveys from the mouth of the Price River to the mouth of the San Rafael River indicated that long tunnels would be necessary if a canal was built in the Gray Canyon of the Green River, long discharge pipes would be required from a direct connected pumping plant to the contour canals in the valley, and the canals would be in very difficult construction until well out on the desert from the Book Cliffs. A soil survey indicated 15,000 acres irrigable of the 77,300 acres inclosed by contour canals with initial water surface 250 feet above the Green River beginning 2 miles north of Gunnison Butte. Conclusions of the investigation:

(*a*) The water supply is adequate for irrigating 15,000 acres with a direct connected pumping plant.

(*b*) The soil is not of a first-class nature, the best portions being located on the east side of the Green River.

(*c*) The best proposition, taking into consideration the future power possibilities and the interests of the whole Gunnison Valley, is a 12,700-acre project, 9,200 acres on the east side (which includes the land under the abandoned Elgin Canal) and 3,500 acres on the west side of the Green River, the estimated cost being $2,320,000. or $183 per acre.

(*d*) The most compact project to build is the 9,200-acre project on the east side of the Green River, the estimated cost being $1,650,000, or $179 per acre.

(*e*) The Green River project is not feasible at this time on account of the high construction cost, small acreage, and low returns from the project's products.

SALT LAKE BASIN INVESTIGATIONS.

These investigations are being conducted under a cooperative contract dated January 3, 1922, between the United States and the State of Utah. Field work has been in progress since April, 1922, being concentrated principally on the Weber River portion. Various reservoir sites on the Weber River are being investigated and fly lines for high-line canals run out to water land in the Sand Ridge and Birch Creek bench localities. A field party has made a rapid fly-line reconnaissance for diverting the Weber River to the Provo River in the vicinity of Kamas, Utah. The report will be made during the fiscal year 1923.

UTAH-COLORADO.

LOWER WHITE RIVER INVESTIGATIONS.

A rapid reconnaissance trip over what is locally known as "Deadman's Bench," north of the White River, was made in June, 1922. A large body of good bench land is situated in the locality, and it is proposed to investigate the feasibility of storage and diversion of the waters of the White River for the irrigation of these lands during the fiscal year 1923.

WASHINGTON.

COLUMBIA BASIN PROJECT.

Drilling was carried on in the Columbia River channel at the head of Grand Coulee to determine foundation conditions for a high dam. Granite was found at an average depth of about 100 feet below water level. A dam built at this location would furnish the necessary power to lift water for the project and in addition make a large amount of power available for commercial uses. The Reclamation Service was connected with this work in a consulting capacity only, funds for the field work having been provided by the State of Washington.

COLUMBIA RIVER POWER INVESTIGATIONS.

A study of the Columbia River Basin with a view to formulating plans for power development along lines that will insure maximum utilization is being conducted by Col. J. B. Cavanaugh, United States Army; D. C. Henny, consulting engineer, United States Reclamation Service; F. F. Henshaw, district engineer, United States Geological Survey, Portland, Oreg.; Marvin Chase, supervisor of hydraulics for State of Washington; C. S. Heidel, State engineer of Montana; and W. G. Swendsen, State commissioner of reclamation for Idaho. The report when completed will be made to the Federal Power Commission.

YAKIMA PROJECT EXTENSIONS.

Located in south central Washington, in Kittitas, Benton, and Yakima Counties, the proposed extensions to the Yakima project include four divisions as follows: Kittitas (70,000 acres), Moxee (36,750 acres), Roza (58,350 acres), Kennewick (35,000 acres). These districts have contracted with the United States for a storage water supply. Funds were advanced to the United States by the Kennewick, Moxee, and Roza divisions, through the respective irrigation district organizations, for making surveys and estimates of cost. Reports and estimates have been completed.

The Kittitas division, organized as the Kittitas reclamation district, has been engaged during the past year on revision of surveys and estimates for construction which were made several years ago. This work is nearing completion. The Kennewick irrigation district (Kennewick division) has carried through to successful conclusion its condemnation suit to acquire water rights and property at the Prosser Dam, needed in connection with its development, and has made good progress in securing right of way for its power canal. The district is now ready to proceed as soon as the required funds

for the construction of the pumping plant and distribution system can be financed.

Although the unit costs for reclamation are shown by the reports to be very high, the agricultural conditions are exceedingly favorable.

WYOMING.

ALCOVA-CASPER PROJECT.

Under a cooperative agreement dated June 20, 1921, this project was investigated as to feasibility and cost. A diversion dam on the North Platte River at Alcova, about 135 feet in height, is proposed, with a main canal some 103 miles in length on the west or north side of the river. Test borings by diamond drill were made at the dam site, but owing to limited funds the borings were not conclusive. The most difficult portions of the line of the main canal were surveyed and mapped. These include four large tunnels and five large siphons. The cost of the project was estimated on the basis of an assumed irrigable area of 100,000 acres. The correct irrigable area is to be determined after completion of a soil survey which was in progress.

SARATOGA-ENCAMPMENT PROJECT.

Under agreement dated April 29, 1921, an investigation was carried on during the summer of 1921 in the upper North Platte River Valley. The agreement confined this investigation to the Saratoga-Encampment Valley, in Carbon County, Wyo. This territory has about 150,000 acres of arable land, 60,000 acres of which are irrigated. The watered lands lie adjacent to the main river and on the first benches above the stream and receive water largely from diversions on the tributaries of the North Platte River. A number of trial lines for canals were run to reach the higher lands and as a result two possible projects were developed. These are known as the Encampment project and the Saratoga project.

The Encampment project contains 18;000 acres of irrigable land which lies west of the North Platte River and east of the town of Encampment. The water supply is to come from Big Creek, a tributary of the North Platte. This project will require storage, which can be secured at the Casteel site situated on a branch of Big Creek.

The Saratoga project lands lie on the east side of the river and extend from Walcott, on the Union Pacific Railway, to a point 18 miles above Saratoga. The water supply for this project will come from the direct flow of the North Platte River. The irrigable area is 38,200 acres.

The results and conclusions, including water supply studies in connection with these investigations, are included in a report in course of preparation.

Financial data for secondary project investigations.

	Deschutes.	Colorado River.	Other projects.	Total.
Appropriations, fiscal year 1922:				
All congressional authorizations	[1] $400,040.93	.....	$319,098.30	$719,139.23
Encumbrances, disbursements, and liabilities	8,351.84	.....	228,428.10	236,779.94
Unexpended balances July 1, 1922	391,689.09	.....	90,670.20	482,359.29
Fiscal year 1923, amount specified in appropriation act	.....	$100,000.00	100,000.00	200,000.00

[1] Appropriation was for the purpose of beginning construction, which plan was abandoned. This project is therefore reported with secondaries.

	Deschutes.		Imperial Valley.		Other investigations.		Total.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.
Net cost of investigations	$6,022.52	$8,386.39	$2,606.62	$40,755.29	$230,732.23	$1,699,337.48	$239,361.37	$1,748,479.16
Less funds advanced	.....	.....	.....	30,000.00	164,706.78	376,135.62	164,706.78	406,135.62
Balance	6,022.52	8,386.39	2,606.62	10,755.29	66,025.45	1,323,201.86	74,654.59	1,342,343.54
Investment to date:								
Reclamation fund—								
Disbursements and net transfers	6,270.90	903.77	1,132.30	51,990.75	218,458.87	1,644,225.31	225,862.07	1,697,119.83
Less collections	.15	.15	.....	45,650.85	187,003.48	440,981.06	187,003.63	486,632.06
Net investment	6,270.75	903.62	1,132.30	6,339.90	31,455.39	1,203,244.25	38,858.44	1,210,487.77
Increase of compensation (net)	41.26	42.93	31.25	2,467.65	6,450.95	24,858.68	6,523.46	27,369.26

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To apply on net cost of investigations:						
Funds advanced—						
Imperial Valley	.....	$30,000.00	.....	$30,000.00	.....	.....
Other secondary investigations	$164,706.78	376,135.62	$158,945.27	342,177.12	.....	$33,958.50
Revenues:						
Rentals of grazing and farming lands—						
Deschutes	.....	7,407.29	.....	.....	$7,407.29	.....
Other secondary investigations	45,744.08	133,886.83	27,486.81	98,142.54	35,090.38	653.91
Other collections:						
Deschutes	.....	.....	.15	.15	.....	.....
Imperial Valley	.....	.....	.....	15,650.85	.....	.....
Other secondary investigations	.....	.....	571.15	661.40	.....	.....
Grand total collections	.....	.....	187,003.38	486,632.06	.....	.....

INDIAN IRRIGATION PROJECTS.

(These projects are being built under a cooperative working agreement between the Reclamation Service and the Office of Indian Affairs, whereby the Reclamation Service forces have charge of the work on the ground and report to the Director of the Reclamation Service, who advises the Commissioner of Indian Affairs of details. The Indian Service sets the general policy to be followed and determines the rate of progress through the medium of the estimates for the annual appropriations in the Indian appropriation bill.)

MONTANA, BLACKFEET (INDIAN) PROJECT.

R. M. SNELL, project manager, Browning, Mont.

The Blackfeet project is located in Glacier and Pondera Counties and is served by the Great Northern Railway. The source of water supply is Two Medicine River, and Cutbank, Badger, Birch, Whitetail, and Blacktail Creeks. Project towns are Browning, Blackfoot, Cutbank, and Valier. Rainfall averages about 12 inches, and the temperature ranges from an average low of −35° F. to 90.5° F. The elevation of the irrigable area is 3,850 feet above sea level; the soil is principally a rich sandy loam with some gravelly loam and gumbo. The principal products are hay, grain, and vegetables; and principal markets, Great Northern Railway towns from St. Paul to the Pacific coast. The irrigation plan provides for the diversion of water from several streams through six canal systems, and for the use of four reservoirs, two of which are now constructed to part capacity.

SUMMARY OF DATA FOR BLACKFEET (INDIAN) PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		107,500
Indian land, June 30, 1922		107,500
Acreage service could supply, season of 1921		20,900
Acreage irrigated, season of 1921		14,650
Acreage cropped under irrigation, season of 1921		14,650
Value of irrigated crops, season of 1921		$192,733
Value of irrigated crops per acre cropped		$13.15
Finances:		
Appropriations—		
Fiscal year 1922, all congressional authorizations, less reduction Director of Budget	$38,791.61	
Encumbrances, disbursements and liabilities	38,791.61	
Fiscal year 1923, amount specified in appropriation act		$30,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$24,443.24	$1,144,360.60
Less water-right contracts[1]	8,926.35	13,672.85
Balance	15,516.89	1,130,687.75

[1] Nominal construction assessment pending completion of project and determination of total charge per acre.

	Indian funds.	Increase of compensation.	Judgments, Court of Claims.	Total.
Investment to date:				
Disbursements and net transfers	$1,198,097.31	$11,564.85	$29.91	$1,209,692.07
Less collections	38,952.24			38,952.24
Net investment	1,159,145.07	11,564.85	29.91	1,170,739.83

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			
			Cash.			
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	Other credits to June 30, 1922.	Uncollected, June 30, 1922.
To return net construction cost, water-right charges	$9,426.35	$13,672.85	$1,625.58	$2,121.00		$11,551.85
Revenues, rentals of irrigating water	15,180.25	31,959.89	12,018.25	21,756.39		10,203.50
Miscellaneous uncollected						187.12
Other miscellaneous collections			2,391.59	15,074.85		
Grand total collections			16,035.42	38,952.24		

ACTIVITIES DURING FISCAL YEAR.

Badger-Fisher division.—Minor timber structures were placed, 6 miles of permanent telephone line were constructed, the timber outlet structure at Four Horns Reservoir was remodeled and slightly enlarged, and construction was commenced on a canal from Four Horns Reservoir to Blacktail Creek.

Operation and maintenance.—The Two Medicine, Badger Fisher, Piegan, and Birch Creek divisions were operated during the season of 1921. Water was delivered on a rental basis. The demand was over 50 per cent greater than ever before. More water than could be delivered through the main canal could have been used to advantage on the Two Medicine division. But if all of the water that could have been delivered had been used to advantage the shortage would have been very slight.

Operation data, Blackfeet project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which the Service was prepared to furnish water	20,000	21,500	21,500	21,500	21,500	[1] 20,900
Acreage irrigated	2,102	2,448	3,484	9,767	9,937	14,650
Miles of canal operated	109	125	152	199	192	255
Water diverted (acre-feet)	7,036	21,284	22,324	38,319	22,133	45,282
Water delivered to land (acre-feet)	1,735	2,663	6,205	14,000	8,955	19,674
Per acre of land irrigated (acre-feet)	.83	1.08	1.88	1.43	.90	1.34

[1] The 20,900 acres reported here is the amount that can be supplied through canals now constructed. The decrease from the amount given last year is due to reclassification of some of the lands. Lateral systems are complete except for minor structures and lateral extensions to reach 48,240 acres.

Settlement data, Blackfeet project.

Item.	1915	1916	1917	1918	1919	1920	1921
Total number of farms on project	3,000	3,000	3,000	3,000	2,900	2,900	2,900
Number of irrigated farms	18	79	91	125	329	351	497
Operated by owners or managers	16	79	84	76	95	151	172
Operated by tenants	2	.....	7	49	234	251	325
Population	50	170	180	229	299	319	435
Number of towns	4	4	4	4	4	4	4
Population	375	1,750	1,900	2,000	3,350	3,000	2,725
Total population in towns and on farms	425	1,920	2,070	2,229	3,649	3,319	3,160
Number of schools	1	5	3	4	6	6	7
Number of churches	3	8	8	8	8	8	8
Number of banks	.....	3	4	4	6	5	4
Capital stock	.....	.....	.....	.....	.....	$130,000	$120,000
Deposits	.....	.....	.....	.....	.....	$851,600	$603,000
Depositors	.....	.....	.....	.....	.....	2,257	1,790

MONTANA, FLATHEAD (INDIAN) PROJECT.

C. J. Moody, project manager, St. Ignatius, Mont.

The Flathead project is located in western Montana in Flathead, Missoula, and Sanders Counties, on the Northern Pacific Railway. There are 15 towns on the project with a total population of 5,500. The source of water supply is from about 70 creeks flowing from the mountains which surround the irrigable lands. The elevation of the irrigable area is 3,000 feet above sea level. The range of temperature is from an average maximum of 96° F. to an average minimum of −21° F. The character of soil on the Jocko division is a gravelly loam; on the Camas and Mission Valley divisions, clay and sandy loam. The irrigation season is from May 1 to September 30, 153 days. Duty of water in acre-feet per annum is 2.75 on the Jocko division and 1.5 on the Camas and Mission Valley divisions. The principal products are hay, grain, vegetables, and fruit. The principal markets are Butte and Missoula, Mont.; Spokane, Wash.; and local mining towns and lumber camps.

The Jocko division includes about 12,000 acres of land irrigated by diversion of the natural flow of Jocko River and tributaries without storage. The Camas division includes about 10,500 acres of land lying along the west side of Little Bitterroot River, which is the water supply. Storage is obtained in Little Bitterroot Lake, where a reservoir of 18,000 acre-feet capacity has been constructed; at the Hubbart Reservoir site, with proposed capacity of 12,000 acre-feet not yet constructed; and at Dry Fork Reservoir, proposed capacity 3,400 acre-feet, which has been constructed to 2,000 acre-feet capacity. The Mission Valley division consists of about 102,000 acres, for which the water supply comes from creeks rising in the Mission Mountains, supplemented by the surplus waters of the Jocko River. Ten reservoirs are proposed with a total capacity of 105,000 acre-feet, of which five are constructed to part capacity with 38,000 acre-feet now available for storage. A feed canal 45 miles in length along the foot of the Mission Mountains has been constructed to collect the water from the several streams.

SUMMARY OF DATA FOR FLATHEAD (INDIAN) PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:			
Irrigable acreage when project is complete			124,500
Public land entered to June 30, 1922		43,008	
State land unsold on June 30, 1922		862	
Indian land, June 30, 1922		34,289	
Private land, June 30, 1922		46,341	
Acreage service could supply, season of 1921			105,500
Acreage irrigated, season of 1921			30,485
Acreage cropped under irrigation, season of 1921			28,821
Value of irrigated crops, season of 1921			$456,588.10
Value of irrigated crops per acre cropped			$15.84
Finances:			
Appropriations—			
Fiscal year 1922, all congressional authorizations	$227,426.82		
Fiscal year 1923, all congressional authorizations	200,000.00		
		$427,426.82	
Encumbrances, disbursements, and liabilities		230,147.67	
Unencumbered balance July 1, 1922			$197,279.15

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$145,560.37	$4,491,586.70
Less water-right contracts,[1] project lands (96,615.15 acres)	48,263.33	62,412.26
Balance	97,297.04	4,429,174.44

[1] Nominal construction assessment, pending completion of project and determination of total charge per acre.

	Indian funds.	Increase of compensation.	Total.
Investment to date:			
Disbursements and net transfers	$4,661,014.41	$136,702.95	$4,797,717.36
Less collections	182,751.84		182,751.84
Net investment	4,478,262.57	136,702.95	4,614,965.52

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected, cash.		Uncollected June 30, 1922.
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.	
To return net construction cost, water-right charges	$48,263.33	$62,412.26	$9,235.78	$13,651.07	$48,761.19
Construction water-right charges paid in advance				43.22	
Revenues:					
Rentals of irrigating water	43,497.14	167,046.98	22,334.35	117,857.90	49,189.08
Rentals of grazing and farming lands		3,450.00		3,450.00	
Total	43,497.14	170,496.98	22,334.35	121,307.90	49,189.08
Miscellaneous uncollected					584.24
Other miscellaneous collections			16,920.56	47,749.65	
Grand total collections			48,490.69	182,751.84	

ACTIVITIES DURING FISCAL YEAR.

Concrete lining of the Dry Creek Canal was finished, involving the finishing to neat lines of 20,700 linear feet of a 250 second-foot canal and placing 270,000 square feet of 3-inch concrete lining reinforced with rectangular mesh reinforcement.

Operation and maintenance.—Precipitation for the year 1921 was 3¾ inches below normal, but there was no shortage of water, largely due to hold-over water in several reservoirs. Precipitation during the irrigation season amounted to 4.99 inches. The tendency among the farmers now is to turn to dairying. For the first time in the history of the project the acreage of alfalfa fields irrigated exceeded that of wheat.

Operation data, Flathead project, by calendar years.

Item.	1916	1917	1918	1919	1920	1021
Acreage for which service was prepared to supply water (storage incomplete)	66,000	80,300	84,300	91,000	98,000	105,500
Acreage irrigated	4,373	15,863	27,128	34,453	32,836	30,485
Miles of canal operated	232	364	674	741	750	713
Water diverted (acre-feet)	23,942	54,853	84,358	112,112	80,961	105,422
Water delivered to the land (acre-feet)	5,751	21,691	34,696	50,607	40,958	47,445
Per acre of land irrigated (acre-feet)	1.32	1.37	1.28	1.47	1.25	1.55

Settlement data, Flathead project.

Item.	1917	1918	1919	1920	1921
Total number of irrigable farms	2,630	2,630	2,630	2,000	2,030
Population	14,500	14,500	14,500	[1] 15,000	[1] 14,000
Number of irrigated farms	567	833	850	1,028	1,105
Operated by owners or managers	425	670	650	799	944
Operated by tenants	142	163	200	229	161
Population	1,319	1,679	1,700	2,380	2,302
Number of towns	12	14	14	14	15
Population	4,000	4,325	5,250	5,445	5,500
Total population in towns and farms	18,500	18,825	19,750	20,445	19,500
Number of public schools	55	60	55	45	45
Number of churches	15	15	16	19	19
Number of banks	9	11	11	11	11
Total capital stock	$205,000	$221,000	$250,000	$287,000	$287,000
Amount of deposits	$1,283,988	$1,011,177	$1,316,907	$1,457,645	$1,238,117
Number of depositors	4,608	4,384	4,656	4,447	4,301

[1] Estimated.

MONTANA, FORT PECK (INDIAN) PROJECT.

S A. Kerr, project manager, Poplar, Mont.

The Fort Peck project is located almost entirely within the Fort Peck Indian Reservation in northeastern Montana. Five principal irrigation systems have been outlined as follows: Big Porcupine division, comprising about 4,000 acres, to be supplied with water from Big Porcupine Creek, the natural flow to be supplemented by storage; Little Porcupine division of 2,000 acres, to be supplied by storage of the flood waters of Little Porcupine Creek; Poplar division of about 30,000 acres, located in Poplar River Valley, to be supplied from the natural flow of Poplar River supplemented by storage; Big Muddy division of 16,000 acres to be supplied by the natural flow of Big Muddy, Smoke, and Wolf Creeks supplemented by storage; and Missouri division of 84,000 acres to be served by a gravity canal from the Missouri River. It was also found possible to irrigate about 18,000 acres by pumping from the Missouri Canal with lifts of from 12 to 20 feet.

The average elevation of the project lands is 2,000 feet above sea level. Winters are rather long and severe but the summers are quite warm with plenty of sunshine so that the length of the actual growing season compares favorably with that of many of the projects farther south. The soil is fertile and deep and varies from a heavy clay to a sandy loam. The rainfall, which varies widely from year to year and is rather erratically distributed throughout the growing season, averages a little over 13 inches for the years 1886 to 1921.

SUMMARY OF DATA FOR FORT PECK (INDIAN) PROJECT TO END OF FISCAL YEAR 1922.

Areas and crops:		
Irrigable acreage when project is complete		152,000
Public land entered to June 30, 1922	9,713	
Public land open to entry on June 30, 1922	107	
Public land withdrawn on June 30, 1922	100	
State land unsold on June 30, 1922	80	
Indian land, June 30, 1922	132,000	
Private land, June 30, 1922	10,000	
Acreage service could supply, season of 1921		20,762
Acreage irrigated, season of 1921		1,021
Acreage cropped under irrigation, season of 1921		894
Acreage dry-farmed, season of 1921	about..	2,000
Value of irrigated crops, season of 1921		$13,213
Value of irrigated crops per acre cropped		$14.75
Value of dry-farmed crops, season of 1921	about..	$10,000
Value of dry-farmed crops per acre cropped	about..	$5.00
Finances:		
Appropriations—		
Fiscal year 1922; all Congressional authorizations	$32,670.18	
Encumbrances, disbursements, and liabilities	20,898.93	
Unencumbered balance July 1, 1922		$11,771.25
Fiscal year 1923, amount specified in appropriation act		19,000.00

	Fiscal year 1922.	To June 30, 1922.
Irrigation works:		
Net construction cost	$39,467.19	$866,121.14
Less water-right contracts[1]	7,557.15	8,260.65
Balance	31,910.04	857,860.49

[1] Water right contracts cover charge of 50 cents an acre on land irrigated for 1920 and 50 cents an acre on all land under ditches, allotted or owned, for 1921.

	Indian funds.	Increase of compensation.	Judgments Court of Claims.	Total.
Investment to date:				
Disbursements	$890,221.62	$16,176.13	$168.34	$906,566.09
Less collections	23,717.12			23,717.12
Net investment	866,504.50	16,176.13	168.43	882,848.97

Status of current accounts receivable as of June 30, 1922.

	Due.		Collected.			Uncollected, June 30 1922.
			Cash.		Other credits to June 30, 1922.	
	Fiscal year 1922.	To June 30, 1922.	Fiscal year 1922.	To June 30, 1922.		
To return net construction cost, water-right charges	$7,557.00	$8,260.65	$165.00	$497.24		$7,763.41
Revenues:						
Rentals of irrigating water	1,042.00	4,055.67	435.00	2,835.15	$69.15	1,151.37
Rentals of grazing and farming lands	83.00	406.00	83.00	406.00		
Total	1,125.00	4,461.67	518.00	3,241.15	69.15	1,151.37
Miscellaneous uncollected						11,504.40
Other miscellaneous collections			13,042.81	19,978.73		
Grand total collections			13,725.81	23,717.12		

ACTIVITIES DURING FISCAL YEAR.

Construction comprised the completion of a siphon on Poplar C Canal and minor structures for an additional area of 2,000 acres on Big Muddy division.

Operation and maintenance.—Only a little over 1,000 acres were irrigated in 1921, although there was no shortage of water on any of the four divisions. This decreased area, as compared with the previous year, reflects the heavier rainfall of 1921, which was 14.9 inches as compared with 9.3 inches in 1920. With the exception of the first 15 days of June, precipitation for the first half of 1922 was favorable for crops, and as most of the irrigated acreage is in native hay which is watered early in the season, indications are that the irrigated area this year will be less than that for 1921. The operation of the project for such a small irrigated acreage, 1,000 acres out of over 22,000 acres under constructed ditches, has resulted in an operation deficit each year, and unless the area irrigated can be greatly increased, each succeeding year will probably add to this deficit.

The ownership of the land involved makes the problem of increasing the irrigated acreage difficult. Of the 22,800 acres under canals 2,450 acres are owned by whites, 2,800 acres by Indians under fee patent, 9,000 acres by Indians under trust patent, 2,550 acres are deceased Indian lands and 6,000 acres are unallotted tribal lands. As the unallotted lands will soon be allotted under trust patent, there will remain out of the 22,800 only 7,800 acres which can be bought and sold. Of this, 5,250 acres can be had by dealing with individual whites and Indians and 2,550 acres through the local Indian office. As many of the Indian allottees are old Indians, minors, or nonresidents and those on the land are not very strongly inclined toward farming, development of the project will have to be by experienced white irrigators from outside the project. Under the present ownership conditions it is difficult to secure these experienced irrigators. In the first place there is little land available for them, and, in the second place, they do not like the prospect of having to bear the major burden of taxation for schools, roads, and other public

improvements, for, whereas all trust patent lands are exempt from taxation, the newcomers, who have first to buy their land outright at once become taxpayers. This burden they must continue to bear for some time as the first trust patents do not expire until 1940 and those for the new allotments can not expire much before 1950 if the trust period is made 25 years as it was in the first allotment.

With the Indians making little use of their land and with such difficulties in the way of experienced irrigators such as must be depended upon to demonstrate the feasibility of the project and make of it an ultimate success, prospects for the immediate development of the project are not bright and there seems small chance for improvement until the major portion of the land is made available for proper settlement.

Operation data, Fort Peck project, by calendar years.

Item.	1916	1917	1918	1919	1920	1921
Acreage for which service was prepared to supply water	12,620	14,220	16,620	16,620	16,620	20,762
Acreage irrigated	1,092	1,602	1,299	1,047	1,568	1,021
Miles of canals operated	85	126	158	158	158	158
Water diverted (acre-feet)	3,500	3,600	3,000	3,000	3,600	3,000
Water delivered to land (acre-feet)	2,250	1,550	1,400	2,000	2,000	1,800
Per acre of land irrigated (acre-feet)	1.5	1.2	1.08	1.9	1.3	1.8

Settlement data, Fort Peck project.

Item.	1915	1916	1917	1918	1919	1920	1921
Total number of allotments on project (irrigable)	1,780	1,780	1,780	1,780	1,780	1,780	1,780
Population (Indian)	2,046	2,092	2,130	2,160	2,157	2,070	2,150
Number of irrigated farms	42	48	58	66	62	70	35
Operated by owners or managers	40	46	57	60	37	45	33
Operated by tenants	2	2	1	6	25	25	2
Population	110	130	134	130	110	150	150
Number of towns	5	5	5	5	5	5	5
Population (white)	1,780	2,200	2,650	3,500	4,850	5,000	5,000
Total population in towns and on farms	1,890	2,330	2,784	3,630	4,960	5,150	7,150
Number of schools:							
Indian	5	5	5	5	4	4	2
White	3	5	5	5	5	5	5
Number of churches	7	7	8	9	9	10	10
Number of banks	5	4	6	9	9	9	6
Total capital stock	$105,000	$110,000	$130,000	$185,000	$225,000	$225,000	$145,000
Amount of deposits	$234,000	$477,000	$580,000	$1,095,000	$1,555,000	$1,700,000	$1,150,000
Number of depositors	1,400	1,970	2,630	3,700	4,500	4,700	3,200

APPENDIX.

LEGISLATION.

EXCHANGE OF LANDS ON NORTH PLATTE PROJECT.

An act providing for an exchange of lands between the Swan Land and Cattle Company and the United States. [Act Aug. 9, 1921, Public No. 44, 42 Stat. 147.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That upon proper execution and delivery by the Swan Land and Cattle Company, Limited, a corporation, of a deed conveying to the United States, its successors and assigns, a good merchantable title in fee, free of incumbrance, to certain lands needed by the United States for construction, operation, and maintenance purposes, in connection with the North Platte irrigation project, Nebraska-Wyoming, to wit: The southwest quarter of the northeast quarter and the southeast quarter of the northwest quarter of section twenty-five, township twenty-five north, range sixty-three west, sixth principal meridian, Wyoming; then in exchange for such lands so conveyed a patent shall be issued by the United States to said Swan Land and Cattle Company, its successors and assigns, conveying to said company the northeast quarter of the northeast quarter of section twenty-six and the northeast quarter of the southwest quarter of section twenty-three, township twenty-five north, range sixty-three west, sixth principal meridian.

CONGRESS CONSENTS TO AGREEMENT BETWEEN STATES RESPECTING WATERS OF COLORADO RIVER.

An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes. [Act Aug. 19, 1921, Public No. 56, 42 Stat. 171.]

Whereas the Colorado River and its several tributaries rise within and flow through or from the boundaries between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming; and

Whereas the territory included within the drainage area of the said stream and its tributaries is largely arid and in small part irrigated, and the present and future development necessities and general welfare of each of said States and of the United States require the further use of the waters of said streams for irrigation and other beneficial purposes, and that future litigation and conflict respecting the use and distribution of said waters should be avoided and settled by compact between said States; and

Whereas the said States, by appropriate legislation, have authorized the governors thereof to appoint commissioners to represent said States for the purpose of entering into a compact or agreement between said States respecting the future utilization and disposition of the waters of the Colorado River and of the streams tributary thereto; and

Whereas the governors of said several States have named and appointed their respective commissioners for the purposes aforesaid, and have presented their resolution to the President of the United States requesting the appointment of a representative on behalf of the United States to participate in said negotiations and to represent the interests of the United States: Now, therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That consent of Congress is hereby given to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming to negotiate and enter into a compact or agreement not later than January 1, 1923, providing for an equitable division and apportionment among said States of the water supply of the Colorado River and of the streams tributary thereto, upon condition that a suitable person, who shall be appointed by the President of the United States, shall participate in said negotiations, as the representative of and for the protection of the interests of the United States, and shall make report to Congress of the proceedings and of any compact or agreement entered into, and the sum of $10,000, or so much thereof as may be necessary, is hereby authorized to be appropriated to pay the

salary and expenses of the representative of the United States appointed hereunder: *Provided*, That any such compact or agreement shall not be binding or obligatory upon any of the parties thereto unless and until the same shall have been approved by the legislature of each of said States and by the Congress of the United States.

SEC. 2. That the right to alter, amend, or repeal this act is herewith expressly reserved.

PREFERRED RIGHT OF ENTRY FOR SOLDIERS.

Joint resolution to amend a joint resolution entitled "Joint resolution giving to discharged soldiers, sailors, and marines a preferred right of homestead entry," approved February 14, 1920. (Pub. Res. No. 36, Jan. 21, 1922, 42 Stat. ——.)

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That a joint resolution entitled "Joint resolution giving to discharged soldiers, sailors, and marines a preferred right of homestead entry," approved February 14, 1920, be, and the same is hereby, amended to read as follows:

"That hereafter, for the period of ten years following the passage of this Act, on the opening of public or Indian lands to entry, or the restoration to entry of public lands theretofore withdrawn from entry, such opening or restoration shall, in the order therefor, provide for a period of not less than ninety days before the general opening of such lands to disposal in which officers, soldiers, sailors, or marines who have served in the Army or Navy of the United States in the war with Germany and been honorably separated or discharged therefrom or placed in the Regular Army or Naval Reserve shall have a preferred right of entry under the homestead or desert land laws, if qualified thereunder, except as against prior existing valid settlement rights and as against preference rights conferred by existing laws or equitable claims subject to allowance and confirmation: *Provided*, That the rights and benefits conferred by this Act shall not extend to any person who, having been drafted for service under the provisions of the Selective Service Act, shall have refused to render such service or to wear the uniform of such service of the United States."

SEC. 2. That the Secretary of the Interior is hereby authorized to make any and all regulations necessary to carry into full force and effect the provisions hereof.

RELIEF TO WATER USERS ON FEDERAL IRRIGATION PROJECTS.

An act to authorize the Secretary of the Interior to extend the time for payment of charges due on reclamation projects, and for other purposes. (Act Mar. 31, 1922, Public No. 185, 42 Stat. —.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That where an individual water user or individual applicant for a water right under a Federal irrigation project constructed under the act of June 17, 1902 (Thirty-second Statutes, page 388), or any Act amendatory thereof or supplementary thereto, is unable to pay any construction charge due and payable in the year 1922 or prior thereto, the Secretary of the Interior is hereby authorized, in his discretion, to extend the date of payment of any such charge for a period not to exceed one year from December 31, 1922: *Provided*, That the applicant for the extention shall first show to the satisfaction of the Secretary of the Interior by a detailed verified statement of his assets and liabilities, an actual inability to make payment at the time the application is made and an apparent ability to meet the deferred charge when the extension expires; also in cases where water for irrigation is available, that the applicant is a landowner or entryman whose land against which the charge has accrued is being actually cultivated: *Provided further*, That similar relief in whole or in part may be extended by the Secretary of the Interior to a legally organized group of water users of a project, upon presentation of a sufficient number of individual showings made in accordance with the foregoing proviso to satisfy the Secretary of the Interior that such extension is necessary: *And provided further*, That each charge so extended shall draw interest at the rate of 6 per centum per annum from its due date in lieu of any penalty that may now be provided by law, but in case such charge is not paid at the end of such extension period, any penalty that would have been applicable save for such extension, shall attach from the date the charge was originally due the same as if no extension had been granted.

SEC. 2. That the Secretary of the Interior is hereby authorized, in his discretion, after due investigation, to furnish irrigation water on Federal irrigation projects during the irrigation season of 1922 to landowners or entrymen who are in arrears for more than one calendar year in the payment of any operation and maintenance or construction charges, notwithstanding the provisions of section 6 of the act of August 13, 1914 (Thirty-eighth Statutes, page 686): *Provided*, That nothing in this section shall be construed to relieve any beneficiary hereunder from payments due or penalties thereon required by said act: *Provided further*, That the relief provided by this section shall be extended only to a landowner or entryman whose land against which the charges have accrued is actually being cultivated.

PATENTS TO DISABLED SOLDIER ENTRYMEN.

An act to amend the Act of March 1, 1921 (Forty-first Statutes, page 1202), entitled "An Act to authorize certain homestead settlers or entrymen who entered the military or naval service of the United States during the war with Germany to make final proof of their entries." [Act April 7, 1922, Public No. 188, 42 Stat., —.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the act approved March 1, 1921 (Forty-first Statutes, page 1202), be amended to read as follows: "That any bona fide settler, applicant, or entryman under the homestead laws of the United States, or any desert land entryman whose entry is subject to the provisions of the act of June 17, 1902 (Thirty-second Statutes, page 388), who after settlement, application, or entry, and prior to November 11, 1918, enlisted or was actually engaged in the United States Army, Navy, or Marine Corps during the war with Germany, who has been honorably discharged and because of physical incapacities due to the service is unable to return to the land, may make final proof, without further residence, improvement, cultivation, or reclamation, at such time and place as may be authorized by the Secretary of the Interior, and receive patent to the land by him so entered or settled upon, subject to the provisions of the act or acts under which such settlement or entry was made: *Provided*, That no such patent shall issue prior to the conformation of the entry to a single farm unit, as required by the act of August, 13, 1914 (Thirty-eighth Statutes, page 686): *And provided further*, That this act shall not be construed to exempt or relieve such applicant or entryman from the payment of any lawful fees, commissions, purchase moneys, water charges, or other sums due to the United States, or its successors in control of the reclamation project, in connection with such lands."

RECLAMATION PROVISIONS IN APPROPRIATION ACT FOR DEPARTMENT OF AGRICULTURE.

[Extracts from] An act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1923. [Act May 11, 1922, Pub. No. 217, 42 Stat. —.]

* * * * * * *

General expenses, Bureau of Plant Industry.—* * *—For investigations in connection with western irrigation agriculture, the utilization of lands reclaimed under the reclamation act, and other areas in the arid and semiarid regions, $94,420.

* * * * * * *

General expenses, Bureau of Soils.—* * *—For examination of soils to aid in the classification of agricultural lands, in cooperation with other bureaus of the department and other departments of the Government, $15,000.

* * * * * * *

General expenses, Bureau of Public Roads.—* * *—For investigating and reporting upon the utilization of water in farm irrigation, including the best methods to apply in practice; the different kinds of power and appliances, and the development of equipment for farm irrigation; the flow of water in ditches, pipes, and other conduits; the duty, apportionment, and measurement of irrigation water; the customs, regulations, and laws affecting irrigation; for the purchase and installation of equipment for experimental purposes; for the giving of expert advice and assistance; for the preparation and illustration of reports and bulletins on irrigation; for the employment of assistants and labor in the city of Washington and elsewhere; for rent outside of the District of Columbia; and for supplies and all necessary expenses, $72,000.

For investigating and reporting upon farm drainage and upon the drainage of swamp and other wet lands which may be made available for agricultural purposes; for preparing plans for the removal of surplus water by drainage, and for giving expert assistance by advice or otherwise in the drainage of such lands; for conducting field experiments and investigations concerning the construction and maintenance of farm-drainage work; for investigating and developing equipment intended for the construction and maintenance of farm-drainage structures; for the purchase of materials and equipment; and for preparing and illustrating reports and bulletins on drainage; and for the employment of assistants and labor in the city of Washington and elsewhere; for rent outside of the District of Columbia, and for supplies and all necessary expenses, $72,260;

Demonstrations on reclamation projects.—To enable the Secretary of Agriculture to encourage and aid in the agricultural development of the Government reclamation projects; to assist, through demonstrations, advice, and in other ways, settlers on the projects; and for the employment of persons and means necessary in the city of Washington and elsewhere, $39,000.

* * * * * * *

IRRIGATION DISTRICTS AND FARM LOANS ON FEDERAL IRRIGATION PROJECTS.

An act to provide for the application of the reclamation law to irrigation districts. (Act May 15, 1922, Public No. 219, 42 Stat. —.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in carrying out the purposes of the act of June 17, 1902 (Thirty-second Statutes, page 388), and acts amendatory thereof and supplementary thereto, and known as and called the reclamation law, the Secretary of the Interior may enter into contract with any legally organized irrigation district whereby such irrigation district shall agree to pay the moneys required to be paid to the United States, and in such event water-right applications on the part of landowners and entrymen, in the discretion of the Secretary of the Interior, may be dispensed with. In the event of such contract being made with an irrigation district, the Secretary of the Interior, in his discretion, may contract that the payments, both for the construction of irrigation works and for operation and maintenance, on the part of the district shall be made upon such dates as will best conform to the district and taxation laws of the respective States under which such irrigation districts shall be formed, and if he deem it advisable he may contract for such penalties or interest charges in case of delinquency in payments as he may deem proper and consistent with such State laws, notwithstanding the provisions of sections 1, 2, 3, 5, and 6 of the reclamation extension act approved August 13, 1914 (Thirty-eighth Statutes, page 686). The Secretary of the Interior may accept a partial payment of the amount due from any district to the United States, providing such acceptance shall not constitute a waiver of the balance remaining due nor the interest or penalties, if any, accruing upon said balance: *Provided*, That no contract with an irrigation district under this act shall be binding on the United States until the proceedings on the part of the district for the authorization of the execution of the contract with the United States shall have been confirmed by decree of a court of competent jurisdiction, or pending appellate action if ground for appeal be laid.

SEC. 2. That patents and water-right certificates which shall hereafter be issued under the terms of the act entitled "An act providing for patents on reclamation entries, and for other purposes," approved August 9, 1912 (Thirty-seventh Statutes at Large, page 265), for lands lying within any irrigation district with which the United States shall have contracted, by which the irrigation district agrees to make the payment of all charges for the building of irrigation works and for operation and maintenance, shall not reserve to the United States a lien for the payment of such charges; and where such a lien shall have been reserved in any patent or water-right certificate issued under the said act of Congress, the Secretary of the Interior is hereby empowered to release such lien in such manner and form as may be deemed effective; and the Secretary of the Interior is further empowered to release liens in favor of the United States contained in water-right applications and to assent to the release of liens to secure reimbursement of moneys due to the United States pursuant to water-right applications running in favor of the water users' association and contained in stock subscription contracts to such associations, when the lands covered by such liens shall be subject to assessment and levy for the collection of all moneys due and to become due to the United States by irrigation districts formed pursuant to State law and with which the United States shall have entered into contract therefor: *Provided*, That no such lien so reserved to the United States in any patent or water-right certificate shall be released until the owner of the land covered by the lien shall consent in writing to the assessment, levy, and collection by such irrigation district of taxes against said land for the payment to the United States of the contract obligation: *Provided further*, That before any lien is released under this act the Secretary of the Interior shall file a written report finding that the contracting irrigation district is legally organized under the laws of the State in which its lands are located, with full power to enter into the contract and to collect by assessment and levy against the lands of the district the amount of the contract obligation.

SEC. 3. That upon the execution of any contract between the United States and any irrigation district pursuant to this act the public lands included within such irrigation district, when subject to entry, and entered lands within such irrigation district, for which no final certificates shall have been issued and which may be designated by the Secretary of the Interior in said contract, shall be subject to all the provisions of the act entitled "An act to promote the reclamation of arid lands," approved August 11, 1916: *Provided*, That no map or plan as required by section 3 of the said act need be filed by the irrigation district for approval by the Secretary of the Interior.

That the term "first mortgage," as used in section 12 of the Federal farm loan act, approved July 17, 1916, shall be construed to include mortgages on farm lands under United States reclamation projects, notwithstanding there may be against such lands

a reserved or created lien in favor of the United States for construction or other charges as provided in the act of June 17, 1902, and acts amendatory thereof and supplementary thereto, known as the reclamation law: *Provided*, That such lands are otherwise eligible for loans under the Federal farm loan act: *And provided further*, That the amount and date of maturity of such lien shall be given due consideration in fixing the value of such lands for loan purposes.

APPROPRIATIONS FOR RECLAMATION SERVICE.

[Extract from] an act making appropriations for the Department of the Interior for the fiscal year ending June 30, 1923, and for other purposes. [Act May 24, 1922, Pub. No. 224, 42 Stat. —.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the Department of the Interior for the fiscal year ending June 30, 1923, namely:

* * * * * * *

RECLAMATION SERVICE.

The following sums are appropriated out of the special fund in the Treasury of the United States created by the Act of June 17, 1902, and therein designated "the reclamation fund," to be available immediately:

For all expenditures authorized by the act of June 17, 1902 (Thirty-second Statutes, page 388), and acts amendatory thereof or supplementary thereto, known as the reclamation law, and all other acts under which expenditures from said fund are authorized, including salaries in the District of Columbia and elsewhere; examination of estimates for appropriations in the field; refunds for over-collections hereafter received on account of water-right charges, rentals, and deposits for other purposes; printing and binding; law books, books of reference, periodicals, engineering and statistical publications, not exceeding $1,500; purchase, maintenance, and operation of horse-drawn or motor-propelled passenger-carrying vehicles; payment of damages caused to the owners of lands or private property of any kind by reason of the operations of the United States, its officers or employees, in the survey, construction, operation, or maintenance of irrigation works, and which may be compromised by agreement between the claimant and the Secretary of the Interior; and payment for official telephone service in the field hereafter incurred in case of official telephones installed in private houses when authorized under regulations established by the Secretary of the Interior:

Salt River project, Arizona: For examination of project and project accounts, $5,000;

Yuma project, Arizona-California: For operation and maintenance, continuation of construction, and incidental operations, $550,000;

Orland project, California: For operation and maintenance, continuation of construction, and incidental operations, $125,000;

Grand Valley project, Colorado, including Orchard Mesa unit: For operation and maintenance, continuation of construction, and incidental operations, $440,000;

Uncompahgre project, Colorado: For operation and maintenance, continuation of construction, and incidental operations, $215,000;

Boise project, Idaho: For operation and maintenance, continuation of construction, and incidental operations: *Provided*, That the expenditure for drainage shall not exceed the amount paid by the water users pursuant to the provisions of the Boise public notice dated February 15, 1921, $1,220,000;

King Hill project, Idaho: For operation and maintenance, continuation of construction, and incidental operations, $450,000;

Minidoka project, Idaho: For operation and maintenance, continuation of construction, and incidental operations, with authority in connection with the construction of American Falls Reservoir, to purchase or condemn and to improve suitable land for a new town site to replace the portion of the town of American Falls which will be flooded by the reservoir, and to provide for the removal of buildings to such new site and to plat and to provide for appraisal of lots in such new town site and to exchange and convey such lots in full or part payment for property to be flooded by the reservoir and to sell for not less than the appraised valuation any lots not used for such exchange, $1,200,000;

Huntley project, Montana: For operation and maintenance, continuation of construction, and incidental operations, $170,000;

Milk River project, Montana: For operation and maintenance, continuation of construction, and incidental operations, $340,000, plus so much of $350,000 additional as

the Secretary of the Interior finds to be available in the reclamation fund on March 1, 1923, in excess of all other appropriations from that fund;

Sun River project, Montana: For operation and maintenance, continuation of construction, and incidental operations, $345,000;

Lower Yellowstone project, Montana-North Dakota: For operation and maintenance, continuation of construction, and incidental operations, $180,000;

North Platte project, Nebraska-Wyoming: For operation and maintenance, continuation of construction, and incidental operations, $1,440,000;

Newlands project, Nevada: For operation and maintenance, continuation of construction, and incidental operations, $915,000;

Carlsbad project, New Mexico: For operation and maintenance, continuation of construction, and incidental operations, $65,000;

Rio Grande project, New Mexico-Texas: For operation and maintenance, continuation of construction, and incidental operations, $1,000,000;

North Dakota pumping project, North Dakota: For operation and maintenance, continuation of construction, and incidental operations, $115,000;

Baker project, Oregon: For investigation, commencement of construction and incidental operations, $400,000;

Umatilla project, Oregon: For operation and maintenance, continuation of construction, and incidental operations, $500,000;

Klamath project, Oregon-California: For operation and maintenance, continuation of construction, and incidental operations, $700,000;

Belle Fourche project, South Dakota: For operation and maintenance, continuation of construction, and incidental operations, $350,000;

Strawberry Valley project, Utah: For operation and maintenance, continuation of construction, and incidental operations, $85,000;

Okanogan project, Washington: For operation and maintenance, continuation of construction, and incidental operations, $40,000;

Yakima project, Washington: For operation and maintenance, continuation of construction, and incidental operations, $1,500,000;

Riverton project, Wyoming: For operation and maintenance, continuation of construction, and incidental operations, $675,000, plus so much of $250,000 additional as the Secretary of the Interior finds to be available in the reclamation fund on March 1, 1923, in excess of all other appropriations from that fund;

Shoshone project, Wyoming: For operation and maintenance, continuation of construction, and incidental operations, $975,000;

Secondary projects: For cooperative and miscellaneous investigations, $100,000;

For the continued investigation of the feasibility of irrigation, water storage, and related problems on the Colorado River, and investigation of water sources of said river, $100,000;

Under the provisions of this act no greater sum shall be expended, nor shall the United States be obligated to expend, during the fiscal year 1923, on any reclamation project appropriated for herein, an amount in excess of the sum herein appropriated therefor, nor shall the whole expenditures or obligations incurred for all of such projects for the fiscal year 1923 exceed the whole amount in the reclamation fund for that fiscal year;

Ten per centum of the foregoing amounts shall be available interchangeably for expenditures on the reclamation projects named; but not more than 10 per centum shall be added to the amount appropriated for any one of said projects, except that should existing works or the water supply for lands under cultivation be endangered by floods or other unusual conditions, an amount sufficient to make necessary emergency repairs shall become available for expenditure by further transfer of appropriation from any of said projects upon approval of the Secretary of the Interior;

Whenever, during the fiscal year ending June 30, 1923, the Director of the Reclamation Service, shall find that the expenses of travel can be reduced thereby, he may, in lieu of actual traveling expenses, under such regulations as he may prescribe, authorize the payment of not to exceed 3 cents per mile for a motor cycle or 7 cents per mile for an automobile, used for necessary travel on official business;

Total, Reclamation Service, $14,800,000.

For reimbursement to the reclamation fund the proportionate expense of operation and maintenance of the reservoirs for furnishing stored water to the lands in Yakima Indian Reservation, Washington, in accordance with the provisions of section 22 of the act of August 1, 1914 (Thirty-eighth Statutes at Large, page 604), there is appropriated, out of any money in the Treasury not otherwise appropriated, $11,000.

* * * * * * *

LAW DECISIONS.

DAMAGES.

Injury to horse.—By contract dated May 5, 1920, the United States Reclamation Service leased a horse and harness from R. R. Vannoy for use on the Yuma Federal irrigation project in Arizona, at a monthly rental of $15, the contract providing that the United States should exercise ordinary care in the use of the property. While the horse was being used with ordinary care, he became frightened at the odor, noise, and paraphernalia of a trapper who was passing by, and as a result ran away and was injured in a barbed-wire fence. The Comptroller General held in this case (Comp. Gen. Dec., March 15, 1922) that the proximate cause of this damage was not the "operations of the United States," but circumstances entirely foreign to and in no way connected with such operations, and that therefore there was no liability on the part of the Government under the appropriation act of June 5, 1920 (41 Stat. 913), or independently thereof.

Liability of Government for seepage.—The destruction of the property of the owner of a lake through the raising of the lake level, consequent upon the carrying out of a Government irrigation project, can not be said to be a taking, from which an agreement by the United States to make compensation will be implied, where the result of the Government work to the lake owner's property could not have been foreseen or foretold. (John Horstmann Co. *v.* United States, 54 Ct. Claims 169, Natron Soda Co. *v.* United States, 54 Ct. Claims 214; 66 L. ed. 80.)

Construction of ditches.—The right of way act of August 30, 1890 (26 Stat. 391), authorizes the construction of ditches only in the exercise of due care, and the land owner can recover any damages resulting from negligent construction. (United States *v.* Ide, et al., 277 F. 373.)

DRAINAGE.

Drainage works part of irrigation system.—The United States may construct drainage works as a part of its irrigation system under a Federal irrigation project. The necessity for drainage in connection with such a project and the method of conducting the work are in the sound discretion of the Secretary of the Interior, and his discretion can not be reviewed by the courts. (United States *v.* Ide et al., 277 F. 373.)

ENTRIES.

Additional entry.—Under the act of June 25, 1910 (36 Stat. 835), as subsequently amended, lands reserved for irrigation purposes are not subject to settlement or entry until the Secretary of the Interior shall have established the unit of acreage per entry and announced that water is ready to be delivered, and no exception to the rule can be made in favor of an applicant who seeks to make an additional entry of such lands in the exercise of a preference right acquired by contest. Section 24 of departmental regulations of May 18, 1916 (45 L. D. 385, 390), are obsolete and inoperative. (Bert Scott, North Platte project, 48 L. D. 85; 48 L. D. 113.)

Relinquishment and withdrawal.—In United States ex rel. Harden *v.* Fall, Secretary of the Interior (276 F. 622), the Circuit Court of Appeals of the District of Columbia holds with the appellant Harden that the right, given by section 10 of the act of August 13, 1914 (38 Stat. 686), to enter lands withdrawn for irrigation purposes under the reclamation law if the lands were acquired by a prior entry since relinquished is not limited to those in privity with the original entryman through purchase of the relinquishment or otherwise. The appellant Harden was denied relief, however, on the ground that his entry was initiated at a time when the land was withdrawn under the first form and it was therefore void and could not be made valid by a subsequent order of the Secretary of the Interior declaring the land was not needed for construction purposes.

LANDS.

Taxation of public land.—In the case of Irwin *v.* Webb (66 L. ed. 333) the United States Supreme Court makes the following holdings regarding the taxation of public land:

Land in a Federal irrigation project constructed under the act of June 17, 1902 (32 Stat. 388), for which a patent has issued conveying a fee in the land, subject to a lien

of the United States, superior to all others, for future installments of water charges, is subject to State taxation.

A State may tax public land when the United States has, by final certificate, parted with the equitable title to a person subject to State taxation, and retains only the legal title by its delay in issuing the patent, but not until the equitable title passes can the State tax the entryman, except in the case of mining claims, and in cases in which express authority to tax is given by statute.

For purposes of State taxation the interest which an entryman has in land in a Federal irrigation project is not put in the same category as a mining claim by the provisions of the assignment act of June 23, 1910 (36 Stat. 592). The evident and sole purpose of this statute was to enable an entryman whose entry was cut down in area by the Secretary of the Interior in prescribing farm units, to dispose of his surplus to another who would be able to hold it, fulfill conditions, and secure a patent, and avoid a relinquishment or cancellation of the surplus, which had been the consequence before the act.

A homestead entryman on land within the Salt River Federal irrigation project in Arizona does not, upon fulfilling all the requirements of the original homestead act of May 20, 1862 (12 Stat. 392), acquire an equitable title from the United States taxable by Arizona, where a number of important steps remain to be taken by such entryman in proving his claim under the reclamation act of June 17, 1902. Such interest is not taxable until final certificate has issued.

Condemnation of land for town site.—The reservoir proposed by the Reclamation Service to be constructed at American Falls, Idaho, as an extension of the Minidoka Federal irrigation project would necessarily flood a portion of the present town site of American Falls, and without the power to acquire and improve a new town site it would be difficult, if not impossible, to acquire rights with respect to public streets, structures, and buildings in the area to be flooded essential to the carrying out of the project. For the purpose of providing for a new town site the United States brought suit in eminent domain to acquire title in fee to 120 acres of land, the property of De Witt G. Brown, under authority of a special provision in the appropriation act of March 4, 1921 (41 Stat. 1403). The defendant contested the suit upon the ground that the United States was without constitutional right to condemn the land in question for town-site purposes. In United States *v.* Brown et al. (279 F. 168), United States District Judge Dietrich held that the necessity of taking land by condemnation for public purposes is a legislative question, and when the taking is to be by the Government itself an act authorizing it is presumed to be within the constitutional power of Congress, and that the said act of March 4, 1921, is valid and authorizes such condemnation.

Land patents to incapacitated ex-service men.—The act of March 1, 1921 (41 Stat. 1202), providing for issuance of patents to incapacitated ex-service men, is an amendment of the homestead law but does not abrogate the provisions of the reclamation law regarding reclamation of one-half of the irrigable area and payment of water charges. These two laws are separate and distinct. The act of March 1, 1921, does not require patent to issue for lands under Federal irrigation projects before submission of final affidavit approved by the project manager, showing reclamation of one-half the irrigable area of the entry and payment of all fees, commissions, and water charges to date of such approval. (Departmental decision, re Claude E. Barber, Belle Fourche project, August 3, 1921.)

RECLAMATION FUND.

Payment of cost of measuring and apportioning waters of St. Mary and Milk Rivers.—Officers and employees of the Reclamation Service detailed to act temporarily under the supervision of the International Joint Commission, to measure and apportion the waters of St. Mary River and Milk River in accordance with the treaty of May 13, 1910 (36 Stat. 451), with Great Britain, should be paid their compensation or salaries from the reclamation fund. If, however, there are expenses incurred by such officers and employees solely because of their work with the commission, such expenses may properly be paid from the appropriation for the support of the commission. (Comp. Dec., April 15, 1921.)

Yuma Mesa auxiliary reclamation fund.—Under the act of January 25, 1917 (39 Stat. 868), as amended by the act of February 11, 1918 (40 Stat. 437), moneys received from the sale of public lands under the Yuma Mesa auxiliary project, in Arizona, may be utilized for the construction of the irrigation works of said project, but reimbursement therefor must be made by the landowners to the auxiliary reclamation fund. Congress failed to make provision for the final disposition of these moneys and they must remain in said auxiliary reclamation fund after repayment, subject to such disposition as Congress may in the future make. (Comp. Dec., May 10, 1921, and July 6, 1921.)

RESERVOIRS.

Horseshoe Reservoir.—The Verde Water & Power Co. claimed an easement in what is known as the Horseshoe Reservoir site in Arizona, under section 2399 of the Revised Statutes of the United States and paragraphs 5337 and 5338, Revised Statutes of Arizona, 1913. This claim was based upon a number of notices of appropriation of the reservoir site and the waters of the Verde River, the first of which was posted August 5, 1901. The company claimed to have expended about $600,000 in the enterprise. On July 27, 1903, the Secretary of the Interior withdrew in connection with the Salt River Federal irrigation project the public lands embracing this site under the first form of withdrawal authorized by section 3 of the act of June 17, 1902 (32 Stat. 388). The Salt River Valley Water Users Association claimed an interest in the site and brought suit against the company to quiet title. The Supreme Court of Arizona decided in favor of the water users association, holding that the withdrawal revoked any permit or license the company had. (Verde Water & Power Co. *v.* Salt River Valley Water Users Association et al., 197 P. 227; 66 L. ed. 64.)

WATER CHARGES.

Boise project suit.—The suit brought April 1, 1918, by the Payette-Boise Water Users Association to secure a reduction of construction charges on the Boise project in Idaho (263 F. 734; 269 F. 159), was settled between the parties by contract dated July 12, 1921, which contract was incorporated in a final decree dated July 28, 1921. Briefly, this contract provides for the sale to project lands of 50,000 additional acre-feet of water from Arrowrock Reservoir and for the expenditure by the United States of from $200,000 to $225,000 for supplemental construction work upon approval thereof by a majority of water-right applicants and entrymen, gives to project lands temporary use of 26,000 acre-feet of water from Arrowrock Reservoir until completion of the supplemental construction work, provides that the cost of future drainage work shall be assessed as an operation and maintenance cost payable in advance, and adopts a tentative construction charge of $77.44, such charge to be readjusted every 5 years for 20 years. The contract sustains the right of the Government to collect the actual cost of construction and amounts to an approval of the validity of contracts between the Government and the Nampa and Meridian, Pioneer, and Riverside irrigation districts.

Yuma project suit.—The suit brought by the Yuma County Water Users Association to reduce construction charges for the Yuma Valley division of the Yuma project in Arizona resulted in a judgment of dismissal in the trial court on February 26, 1920. From this decision the association appealed to the circuit court of appeals and on November 7, 1921, that court affirmed the decision of the trial court (275 F. 885).

Construction of contract.—Under a contract by which the Government took over the canal system of an irrigation company for the purpose of incorporating it in a larger Government project and providing that "an equitable proportion of the cost of maintaining and operating the system of irrigation works which may be constructed by the United States on the south side of the Boise Valley, as may be determined by the Secretary of the Interior, shall be paid to the United States by the holders of said certificates of stock," the fact that during the construction of the Government project the manager made charges for water furnished such stockholders on a different basis, *held* not to affect the right and duty of the Secretary, after completion of the project, to make the apportionment as expressly provided in the contract. Where the meaning of an instrument is clear, error in its construction by the parties can not control its effect. (New York Canal Co., Limited, *v.* Bond et al., 273 F. 825.)

Penalties.—The Flathead Indian Federal irrigation project in Montana is not a reclamation project as contemplated by the act of June 17, 1902 (32 Stat. 388), and amendments thereto, and is not subject to the provisions of the act of August 13, 1914 (38 Stat. 686). In providing for partial reimbursement of construction costs under the Indian appropriation act of February 14, 1920 (41 Stat. 409), the Secretary of the Interior is without authority to require payment of a penalty by either Indians or white settlers in case of a delinquency in payment. (Opinion Solicitor for the Department of the Interior, November 15, 1921.)

Extension of charges.—The relief act of March 31, 1922 (Public No. 185, 42 Stat. —), authorizes the Secretary in his discretion to make certain extensions of construction charges and to deliver water in 1922 to those delinquent for more than one calendar year. Departmental interpretations of this act are contained in C. L's 1100, 1120, 1132, and 1139.

WATER RIGHTS.

Seepage waters in Idaho.—In United States *v.* Haga (276 F. 41), the United States District Court for the Southern District of Idaho sustains the right of the Government to utilize waste and seepage waters developed under a Federal irrigation project.

Seepage waters in Wyoming.—The United States can save and continue to use the drainage, seepage, and waste waters from a Federal irrigation project even after such waters have been allowed to escape, so long as they can be identified and have not been abandoned. Even if waste water from a Government project has once been abandoned, the Government can thereafter reclaim such water and apply it to beneficial use if no right of third parties has intervened. (United States *v.* Ide, et al., 277 F. 373.)

Authority of Washington State Engineer. —TheState Hydraulic Engineer of Washington has authority to issue or enforce an order that an irrigation company take no more waters from a river than the amount provided for in a limiting agreement entered into by it and approved by the Federal courts. The hydraulic engineer in so doing does not act in a judicial capacity nor is he strictly enforcing the decree of a Federal court, but is merely enforcing a right which the Federal court has determined to exist. (West Side Irrigating Co. *v.* Chase, 196 P. 666; see 192 P. 892; 230 F. 284; 246 F. 212; 264 F. 538.)

Decision of International Joint Commission.—On October 4, 1921, at Ottawa, Canada, the International Joint Commission handed down a unanimous decision interpreting Article VI of the treaty of January 11, 1909 (36 Stat. 2451), between the United States and Great Britain, relative to the measurement and apportionment of the waters of the St. Mary and Milk Rivers and their tributaries in the State of Montana and the Provinces of Alberta and Saskatchewan. The questions involved affect the water supply of the Milk River Federal irrigation project in Montana, and were argued before the commission at St. Paul, Minn., in 1915, at Detroit, Mich., in 1917, and at Ottawa, Canada, in 1920. The text of the decision appears in the November, 1921, issue of the Reclamation Record, at page 515.

WATER USERS' ASSOCIATIONS.

Personal liability.—Neither the articles of incorporation nor the by-laws of the Payette-Boise Water Users' Association (Boise Federal irrigation project, Idaho) nor the stock subscription contracts made by its members, contains an agreement to pay assessments, and therefore there is no personal liability on the part of the members to make such payments. (Opinion State District Judge B. S. Varian, October 11, 1921, in Payette-Boise Water Users' Association *v.* Mercer, citing Wall *v.* Basin Mining Co., 16 Idaho, 328; 101 Pac. 733.)

Application of State law.—The provisions of the articles of incorporation and by-laws of the Payette-Boise Water Users' Association (Boise Federal irrigation project, Idaho) and of the stock subscription contracts made by its members, are merely declaratory of State law, and the direction of the latter must be followed in order to enforce the lien of an assessment made against a member. (Opinion State District Judge B. S. Varian, October 19, 1921, in Payette-Boise Water Users' Association *v.* Griffiths.)

Foreclosure of lien.—The Payette-Boise Water Users' Association brought suit against Sherman D. Fairchild, one of its members, to secure personal judgment for the amount of an assessment levied by the association. Fairchild contended that under his subscription contract for shares in the association, a lien to secure assessments was created, which lien could be enforced only by foreclosure and sale as in the case of mortgages, and that the association in an action to force collection of the assessment could not segregate from the contract the simple promise to pay such assessments and sue on the contract for a personal judgment without foreclosure. The defendant obtained judgment in the trial court which was sustained by the Supreme Court of Idaho, in Payette-Boise Water Users' Association (Ltd.) *v.* Fairchild, 205 P. 258.

ENGINEERING DATA FOR PROJECTS ON COMPLETION.

The following tables of data for projects on completion, covering reservoirs, storage dams, diversion dams, and irrigable area, are necessarily subject to some revision as the projects develop and more detailed plans are prepared. In so far as they refer to works yet to be built or areas not yet covered by canal, they are not to be taken as guaranteeing that such work will ever be done. All future work depends on appropriations therefor by Congress.]

Engineering data for projects when completed.

RESERVOIRS.

Projects.	Name.	Area.	Capacity.	Spillways.			
				Length.	Elevation above stream bed.	Capacity.	
						Normal.	Maximum.
		Acres.	*Acre-feet.*	*Feet.*	*Feet.*	*Sec.-ft.*	*Sec.-ft.*
Arizona: Salt River	Roosevelt	16,832	1,305,000	420	225		
California: Orland	East Park	1,850	51,000	415	88	8,000	12,000
Colorado: Uncompahgre	Taylor Park	2,260	106,000	[1]	[1]	[1]	[1]
Idaho:							
Boise	Deer Flat	9,835	177,000	None.			
Do	Arrowrock	2,860	280,000	402	247	15,000	40,000
Minidoka	Lake Walcott	11,350	[2] 150,000	2,385	42	40,000	60,000
Do	Jackson Lake	25,530	847,000	160	41	7,500	13,000
Montana:							
Milk River	St. Mary Lakes	6,910	124,000	500	20	[3] 500	20,000
Do	Sherburne Lakes	2,000	78,000	200	70	[3] 200	8,000
Do	Nelson Reservoir	4,560	66,800	[4]	[4] 23		
Do	Point of Rocks	180	830	740	8	[3] 0	700
Do	Beaver Creek	5,800	50,000	238	39	[3] 100	15,000
Do	Chain Lakes	9,400	244,000	300	58	[3] 300	10,000
Sun River	Willow Creek	2,696	86,000	200	100	725	[1]
Do	Beaver Creek [5]	1,360	105,000	275	190		42,500
Do	Pishkun Reservoir	1,542	45,700	Under	control.		
Do	Muddy Creek	1,828	33,000		80	284	[1]
Do	Benton Lake	9,300	144,000	Under	control.		
Nebraska - Wyoming:							
North Platte	Pathfinder	22,700	1,070,000	605	184	40,000	
Do	Lake Alice	900	11,400	100	18	2,500	
Do	Lake Minatare	2,240	60,760	100	55	2,000	
Do	Winters Creek Lake	360	3,000	None.			
Do	Guernsey	2,336	72,700	300	80	27,500	50,000
Nevada: Newlands	Lake Tahoe	120,000	120,000	85	6		
Do	Lahontan	12,000	290,000	500	112		30,000
Do	Spanish Springs	17,700	300,000	60	96		1,600
New Mexico: Carlsbad	Avalon	970	7,000	1,026	21	86,000	
Do	McMillan	7,860	45,000	1,750	26.1-24.9	17,000	34,500
New Mexico-Texas: Rio Grande.	Elephant Butte	40,080	2,638,000	275	193	8,000	16,000
Oregon: Umatilla	Cold Springs	1,500	50,000	330	90	6,000	6,000
Do	McKay	1,600	75,000	120	140	10,000	10,000
Oregon-California: Klamath.	Upper Klamath Lake	60,000	264,000	None.			
Do	Clear Lake	25,000	462,000	357	24	10,000	30,000
South Dakota: Belle Fourche.	Belle Fourche	8,010	203,000	314	100	2,000	2,000
Do	Nine Mile	150	2,500	20	20	[1]	[1]
Utah: Strawberry Valley	Strawberry Valley	8,370	250,000	58	61	500	2,000
Washington:							
Okanogan	Salmon Lake	240	10,500	Siphon.	42		400
Do	Conconully	460	14,400	180	55	4,500	16,000
Yakima	Bumping Lake	1,350	34,000	235	36		6,000
Do	Lake Clealum	4,680	501,000	420	112		18,000
Do	Lake Kachess	4,800	210,000	250	53		7,200
Do	Tieton	2,500	202,500	390	206		50,000
Do	Lake Keechelus	2,550	152,000	300	60		10,000
Do	Clear Creek	126	1,700	210	35		
Wyoming: Riverton	Pilot Butte	882	30,000			500	500
Do	Bull Lake	3,100	145,000		67		
Shoshone	Shoshone	6,600	456,600	300	233	11,000	30,000
Do	Ralston	200	2,100				
Do	Deaver	80	680	None.			

[1] Undetermined.
[2] 95,180 acre-feet only available; above fixed crest of spillway.
[3] Average flow of stream on which reservoir is located.
[4] No spillways; drainage limited; elevation is that of water surface.
[5] Tentative.

Engineering data for projects when completed—Continued.

RESERVOIRS—Continued.

Projects.	Name.	Area.	Capacity.	Spillways.			
				Length.	Elevation above stream bed.	Capacity.	
						Normal.	Maximum.
INDIAN PROJECTS.							
Montana:		*Acres.*	*Acre-feet.*	*Feet.*	*Feet.*	*Sec.-ft.*	*Sec.-ft.*
Blackfeet	Two Medicine Lake	854	16,000	66	25½	[3] 350	6,000
Do	Spring Lake	1,670	29,000	.....	35	.....	.....
Do	Four Horns	1,130	30,000	.....	[4] 45	.....	.....
Do	Guardipee	1,260	30,000	.....	[4] 40	.....	.....
Flathead	Dog Lake	160	3,200	.....	[4] 30	.....	.....
Do	Dry Fork	330	[7] 3,400	250	28	500	1,500
Do	Flathead Lake	120,000	1,800,000	1,000	180	100,000	150,000
Do	Horte	73	[8] 260	40	17	140	300
Do	Hubbart	400	12,000	265	95	5,000	5,000
Do	Kickinghorse	675	6,800	.....	[4] 23	.....	.....
Do	Little Bitterroot Lake	3,000	[8] 18,000	.....	[4] 3	.....	.....
Do	Lower Crow Creek	300	9,485	100	82	600	1,500
Do	McDonald Lake	220	[9] 10,600	100	51	4,000	6,000
Do	Mission	300	8,300	100	74	1,200	3,000
Do	Ninepipe	1,630	[10] 15,100	.....	[4] 30	.....	.....
Do	Pablo	2,100	[11] 29,600	.....	[4] 36	.....	.....
Do	Polson	70	1,700	.....	[4] 80	.....	.....
Do	Tabor	300	[12] 22,000	50	42	400	1,200
Do	Twin	70	937	.....	[4] 25	.....	.....
Fort Peck	Little Porcupine	590	3,900	.....	.....	.....	.....
Do	Big Porcupine	400	3,800	[1] 100	.....	.....	.....
Do	Poplar River	3,700	50,000	(1)	.....	.....	.....
Do	Wolf Creek	350	4,550	(1)	.....	.....	.....
Do	Smoke Creek	300	5,300	(1)	.....	.....	.....
Total		615,119	13,692,102	.....	.....	.....	.....

STORAGE DAMS.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Arizona: Salt River	Roosevelt [8]	Rubble masonry arch, gravity.	280	1,125	342,325
California: Orland	East Park [8]	Concrete arch, gravity	139	250	12,200
Colorado: Umcompahgre	Taylor Park	Undetermined	([13])	([13])	([13])
Idaho:					
Boise	Upper Deer Flat [8]	Earth fill	70	4,000	1,190,275
Do	Lower Deer Flat [8]	....do	40	7,200	1,207,606
Do	Deer Flat Forest [8]	....do	16	950	22,500
Do	Arrowrock [8]	Rubble concrete arch, gravity.	349	1,100	585,130
Minidoka	Minidoka [8]	Rock fill, concrete core	86	937	242,500
Do	Jackson Lake [8]	Massive concrete gate section and earth fill.	67	4,450	345,400
Montana:					
Milk River	St. Marys Lake	Earth embankment	30	2,000	135,000
Do	Sherburne Lakes [14]	....do	78	2,000	215,000
Do	Nelson Reservoir [15]	....do	28	9,900	175,000
Do	Point of Rocks [8]	....do	12.5	2,680	31,000
Do	Beaver Creek	....do	49	6,000	658,000
Do	Connolly	....do	70	3,125	1,795,600
Sun River	Willow Creek [16]	Earth fill	110	1,045	452,000
Do	Beaver Creek [5]	Masonry	205	820	195,000
Do	Pishkun	Earth fill	48	8,600	444,000
Do	Muddy Creek	....do	90	800	440,000
Do	Benton Lake	....do	40	240	12,000

[1] Undetermined
[3] Average flow of stream on which reservoir is located.
[4] No spillways; drainage limited; elevation is that of water surface.
[5] Tentative.
[6] Elevation above outlet.
[7] Present capacity 2,000 acre-feet.
[8] Completed.
[9] Present capacity, 8,200 acre-feet.
[10] Present capacity, 5,500 acre-feet.
[11] Present capacity, 12,000 acre-feet.
[12] Present capacity, that of natural lake 12,300.
[13] Not designed.
[14] First development completed.
[15] Completed except a small amount of gravel blanket.
[16] Completed to height of 70 feet.

Engineering data for projects when completed—Continued.

STORAGE DAMS—Continued.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Nebraska-Wyoming: North Platte.	Pathfinder [8]	Broken range masonry arch.	218	432	60,210
Do	Pathfinder Dike [8]	Earth fill	40	1,650	152,000
Do	Dam No. 1 [8]	do	30	3,100	240,000
Do	Dam No. 1½ [8]	do	23	2,550	119,000
Do	Minatare [8]	do	65	3,700	570,000
Nevada: Newlands	Lake Tahoe [8]	Concrete sluiceway regulator.	14	109	425
Do	Lahontan [8]	Earth and gravel fill with concrete spillways.	124	1,400	770,000
Do	Spanish Springs	do	112	2,815	
New Mexico: Carlsbad	Avalon [8]	Earth and rock fill, concrete core.	50	1,380	168,773
Do	McMillan [8]	Earth and rock fill	55	2,070	150,744
New Mexico-Texas: Rio Grande.	Elephant Butte [8]	Rubble concrete, gravity	306	[17] 1,155	[18] 605,200
Do	Elephant Butte Dike [8]	Earth and rock fill	42	2,000	179,000
Oregon: Umatilla	Cold Springs [8]	do	98	3,800	789,500
Oregon-California: Klamath.	Clear Lake [8]	Rock fill	33	790	56,600
Do	Link River	Concrete	22	435	2,200
South Dakota: Belle Fourche.	Belle Fourche [8]	Earth fill	115	6,200	1,600,000
Do	Nine Mile	do	28	1,400	50,800
Utah: Strawberry Valley.	Indian Creek Dike [8]	Earth fill, reinforced concrete	37	1,311	101,107
Do	Strawberry Dam [8]	Earth fill, reinforced concrete core wall.	72	488	108,415
Washington:					
Okanogan	Salmon Lake	Earth embankment	40	1,260	180,211
Do	Conconully	Hydraulic earth fill	64	1,000	354,242
Yakima	Bumping Lake [8]	Earth fill	45	3,425	247,700
Do	Lake Cle Elum	Earth and gravel fill	125	700	462,000
Do	Lake Kachess [8]	do	63	1,400	193,300
Do	Tieton	Earth and rock fill, concrete core wall.	321	905	1,850,000
Do	Lake Keechelus [8]	Earth and gravel fill	70	6,500	639,000
Do	Clear Creek [8]	Single concrete arch	84	404	4,100
Wyoming: Riverton.	Pilot Butte	Earth embankment	40	3,000	
Do	Bull Lake	do	77	3,200	
Shoshone	Shoshone [8]	Rubble concrete arch	328	200	78,576
Do	Ralston [8]	Earth fill	50	150	24,740
Do	Deaver	do	14	1,300	30,300
INDIAN PROJECTS.					
Montana:					
Blackfeet	Two Medicine [19]	Earth embankment	36	900	28,600
Do	Spring Lake	do	45	1,625	156,000
Do	Four Horns [20]	do	55	1,650	46,000
Do	Guardipee	do	50	613	35,000
Flathead	Dog Lake	Loose rock and earth	35	2,250	67,000
Do	Dry Fork [21]	Earth	33	3,250	118,500
Do	Newell	Concrete	170	850	100,000
Do	Horte [8]	Earth fill	16	930	3,800
Do	Hubbart	Concrete	104	500	16,000
Do	Kickinghorse	Earth	31	3,700	181,000
Do	Little Bitterroot [8]	do	10	800	10,000
Do	Lower Crow Creek	do	92	860	330,000
Do	McDonald Lake [22]	Loose rock and earth	57	1,500	214,000
Do	Mission	do	80	2,500	346,000
Do	Ninepipe [23]	Earth	38	2,180	162,000
Do	Pablo [24]	do	46	14,000	1,028,000
Do	Polson	do	85	1,100	170,000
Do	Tabor	Loose rock and earth	58	2,200	140,000
Do	Twin	Earth	30	1,600	46,000
Fort Peck	Little Porcupine [8]	Earth fill	17	4,200	43,400
Do	Big Porcupine	do	30	1,500	118,000
Do	Poplar River	do	51	5,200	1,500,000
Do	Wolf Creek	do	36		85,300
Do	Smoke Creek	do	48		76,000
Total					23,318,279

[8] Completed.
[17] Including spillway and approaches, 1,675 feet.
[18] Including spillway, 619,000 cubic yards.
[19] Completed, except automatic crest.
[20] Completed for 4,000 acre-feet.
[21] First development completed; 83,500 cubic yards.
[22] First development completed; 114,000 cubic yards; 8,200 acre-feet.
[23] First development, 64,191; completed for 5,000 acre-feet.
[24] First development, 153,750; completed for 13,000 acre-feet.

Engineering data for projects when completed—Continued.

DIVERSION DAMS.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Arizona: Salt River	Granite Reef [8]	Rubble concrete weir	38	1,000	40,000
Do	Power Canal [8]	do	12¾	400	4,800
Do	Joint Head [8]	Concrete weir	10	600	1,740
Arizona - California: Yuma.	Laguna [8]	Indian weir, concrete and rock fill. [27]	10	4,780	441,732
California: Orland	South Canal [8]	Concrete on piling, with rock fill.	20	900	2,886
Do	North side [8]	Concrete weir, with removable timber crest.	8	360	270
Do	East Park Feed Canal. [8]	Concrete arch	44	154	1,777
Colorado:					
Grand Valley	Colorado River Diversion. [8]	Masonry ogee weir with roller crest 10 to 15 feet high.	24	546	25,682
Uncompahgree	Gunnison [8]	Crib on rock fill and movable flashboards.	15¾	237	3,200
Do	Montrose and Delta [8]	Movable flashboard weir	6. 8	68½	
Do	Loutsenhizer [8]	Pile and timber weir		100	
Do	Selig [8]	Movable flashboard weir	6	95½	
Do	Ironstone [3]	Pile foundation with deck and needle flashboards.	8½	58½	
Do	East Canal [8]	Movable flashboard weir	(28)	144	
Do	Garnet [8]	Rubble concrete			
Idaho:					
Boise	Boise River [8]	Rubble concrete weir	45	[29] 246	21,750
Do	Black Canyon	Concrete masonry	153	1,075	74,500
Minidoka	Minidoka [8]	Combined diversion and storage dam. (See Storage.)			
Montana:					
Milk River	Swift Current [8]	Earth and timber crib	13	2,800	86,700
Do	St. Mary [8]	Concrete	6.5	198	480
Do	Chinook [30]				
Do	Dodson [8]	Timber crib, rock filled, concrete abutments, movable crest.	25	319	12,000
Do	Vandalia [8]	Reinforced concrete, automatic movable crest.	34	1,500	11,000
Sun River	Sun River [8]	Concrete masonry	132	212	6,200
Do	Deep Creek	Reinforced concrete	12	100	500
Montana-North Dakota: Lower Yellowstone.	Lower Yellowstone [8]	Rock-filled, timber weir	12	700	14,500
Nebraska-Wyoming: North Platte.	Whalen [8]	Concrete weir	29	300	80,740
Nevada: Newlands	Truckee River [8]	16 concrete sluiceways	22	171	3,322
Do	Carson River [8]	23 concrete sluiceways	21	240	2,707
New Mexico: Carlsbad.	Avalon [8]	Combined storage and diversion. (See Storage.)			
New Mexico - Texas: Rio Grande.	Leasburg [8]	Rubble concrete weir	10. 8	600	2,413
Do	Mesilla [8]	do	16. 7	303	2,876
Do	Mexican [31]	Rubble masonry	4. 7	320	
Do	Percha [8]	Rubble concrete	17	350	4,346
Oregon: Umatilla	Feed Canal (Echo) [8]	Concrete weir on timber crib	2½	400	296
Do	Maxwell Canal [8]	do	2. 3	175	43
Do	Three-Mile Falls [8]	Concrete multiple arch	24	800	4,160
Oregon - California: Klamath.	Lost River [8]	Hollow reinforced concrete	40	290	5,550
Do	Lower Lost River [19]	Reinforced concrete	15	204	625
Do	Langell Valley	Earth, with concrete spillway.	30	515	17,415
South Dakota: Belle Fourche.	Diversion [8]	Concrete weir	23	400	12,149
Utah: Strawberry Valley.	Spanish Fork [8]	do	16	70	1,262
Do	Indian Creek Crossing [8]	Earth	17	1,300	15,183
Do	Horse Creek Crossing [8]	do	6	500	7,376
Do	Diverting dam at Strawberry Dam. [8]	do	6	100	1,146
Do	Diverting dam at rating flume. [8]	do	12	150	4,103

[8] Completed.
[19] Under construction.
[27] Maximum height 10 feet from bottom of sheet piling to top of dam; water raised 10 feet.
[28] Two weirs, one 6 feet by 72 feet, the other 6 feet 10 inches by 72 feet.
[29] Length, including logway.
[30] Will be constructed by irrigation districts. No data available as to type and dimensions.
[31] Constructed by Mexican authorities and used jointly.

Engineering data for projects when completed—Continued.

DIVERSION DAMS—Continued.

Projects.	Name.	Type.	Maximum height.	Crest length.	Volume.
			Feet.	*Feet.*	*Cubic yds.*
Washington:					
Okanogan	Salmon Creek [8]	Concrete weir	4½	50	132
Yakima	Sunnyside [8]	Concrete ogee weir	8½	500	2,291
Do	Tieton Diversion [8]	Concrete and rock-filled crib	3	110	334
Wyoming:					
Riverton	Wind River [19]	Concrete weir	27	625	17,000
Shoshone	Corbett [8]	Reinforced concrete weir	18	400	4,951
Do	Willwood	Concrete gravity, with ogee weir section.	68	320	18,500
INDIAN PROJECTS.					
Montana:					
Blackfeet	Two Medicine	Brush and rock	4	165	175
Do	Blacktail [8]	Concrete	14	54	290
Do	Badger Birch and Cut Bank.	Not yet designed			
Flathead	Jocko River	Log crib, rock filled [13]			
Do	Little Bitterroot	....do			
Do	Camas A [8]	Arched masonry	25	125	500
Do	Mud Creek [8]	Concrete	12	18	116
Do	Crow Creek [8]	....do	13	82	330
Do	Post Creek—Kickinghorse. [8]	Log crib, rock filled	7	110	1,500
Do	Post Creek—Pablo Feeder.	Concrete [13]			
Do	Mission Creek [8]—B Lateral.	Log apron	3	80	
Do	Dry Creek [8]	Log crib, rock filled [13]	10	20.67	115
Do	Finley Creek	....do			
Do	Agency Creek	Concrete			
Do	Big Knife Creek [8]	....do	5	6	25
Do	Valley Creek	Log crib, rock filled [13]			
Do	Other small creeks	....do			
Fort Peck	Little Porcupine [8]	Concrete weir on timber crib	4	150	250
Do	Poplar River [8]	....do	4	300	180
Do	Big Porcupine [8]	....do	6	150	185
Do	Big Muddy	Concrete	17	72	340
Total					962,143

IRRIGABLE AREA, PRESENT STATUS.

State, project, and division.	Public land.			State land unsold.	Indian land.	Private land.		Total.
	Entered.	Open.	Withdrawn.			Railroad, unsold.	Other.	
Arizona:	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Salt River	16,170						196,830	213,000
Gravity system							183,077	183,077
Pumping system	16,170						13,753	29,923
Arizona-California: Yuma	18,060	286	33,284		8,200		50,170	110,000
Arizona—								
Valley	6,070		1,000				42,930	50,000
Mesa	5,790	286	31,884				7,040	45,000
California—Reservation	6,200		400		8,200		200	15,000
California:								
Orland—Main							[1] 20,657	[1] 20,657
Colorado:								
Grand Valley	13,442	403	12,310				28,845	55,000
Garfield gravity	10,912	403	8,280				15,405	35,000
Garfield pumping	2,530		4,030				3,440	10,000
Orchard Mesa pumping							10,000	10,000
Uncompahgre	19,687	1,094	799				75,830	97,410
South Canal system	2,330	306	32				6,339	9,007
West Canal system	2,286	10	12				4,033	6,341
Montrose and Delta Canal system	5,376	70	31				23,257	28,734
Loutsenhizer Canal system	230						6,463	6,693
Selig Canal system	4,286	359	610				7,433	12,688
Ironstone Canal system	1,203	65	20				16,752	18,040
East Canal system	3,968	284	94				8,877	13,223
Garnet Canal system	8						2,676	2,684

[1] Includes 320 acres of vested rights and 162 acres of town and school sites.
[8] Completed.
[13] Not designed.
[19] Under construction.

Engineering data for projects when completed—Continued.

IRRIGABLE AREA, PRESENT STATUS—Continued.

State, project, and division.	Public land.			State land unsold.	Indian land.	Private land.		Total.
	Entered.	Open.	Withdrawn.			Railroad, unsold.	Other.	
Idaho:	*Acres.*	*Acres.*	*Acres*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Boise	67,468	.....	5,560	5,980	.....	.....	274,592	353,600
Arrowrock (Idaho)	66,229	.....	.....	60	.....	.....	203,401	269,690
Arrowrock (Oregon)	1,239	.....	.....	.....	.....	.....	5,697	6,936
Notus	.....	.....	.....	.....	.....	.....	6,874	6,874
Hillcrest	.....	.....	2,230	.....	.....	.....	11,870	14,100
Black Canyon	.....	.....	3,330	5,920	.....	.....	46,750	56,000
King Hill	518	119	.....	370	.....	.....	15,971	16,978
Minidoka	96,357	343	.....	28	.....	.....	24,829	121,557
Gravity	.....	.....	.....	.....	.....	.....	.....	72,595
Pumping	.....	.....	.....	.....	.....	.....	.....	48,962
Montana:								
Huntley	26,286	.....	2,526	.....	.....	.....	3,906	32,718
Gravity	.....	.....	.....	.....	.....	.....	.....	27,181
Pumping	.....	.....	.....	.....	.....	.....	.....	5,537
Divisions—								
Prior	.....	.....	.....	.....	.....	.....	.....	28,463
Eastern	.....	.....	.....	.....	.....	.....	.....	1,858
Fly Creek	.....	.....	.....	.....	.....	.....	.....	2,397
Milk River	31,590	.....	19,603	6,795	.....	.....	102,220	160,208
Chinook division	1,941	.....	2,143	1,223	.....	.....	52,296	57,603
Malta division	23,316	.....	16,956	4,369	.....	.....	34,833	79,474
Glasgow division	6,333	.....	504	1,203	.....	.....	15,091	23,131
Sun River	42,900	.....	39,000	9,500	.....	249	78,051	169,700
Sun River Slope	700	.....	12,900	1,100	.....	.....	2,300	17,000
Big Coulee	.....	.....	.....	356	.....	.....	1,962	2,318
Greenfields	25,236	.....	22,889	4,890	.....	.....	21,912	74,927
Mill Coulee	3,000	.....	3,000	500	.....	.....	2,000	8,500
Fort Shaw	11,964	.....	211	154	.....	249	1,677	14,255
Great Falls	.....	.....	.....	200	.....	.....	7,500	7,700
Vaughn	.....	.....	.....	500	.....	.....	9,500	10,000
Benton	2,000	.....	.....	1,800	.....	.....	31,200	35,000
Montana-North Dakota:								
Lower Yellowstone	13,984	.....	2,412	986	.....	97	42,050	59,529
Montana	7,457	.....	1,285	846	.....	97	29,523	39,208
North Dakota	6,527	.....	1,127	140	.....	.....	12,527	20,321
Divisions—								
Gravity	13,631	.....	2,356	704	.....	52	40,478	57,221
Pumping	353	.....	56	282	.....	45	1,572	2,308
Nebraska-Wyoming: North Platte	[2] 134,870	.....	16,422	9,254	.....	.....	[2] 91,999	[2] 252,545
Interstate division	83,681	.....	411	529	.....	.....	45,924	130,545
Nebraska	81,070	.....	411	529	.....	.....	28,939	110,949
Wyoming	2,611	.....	.....	.....	.....	.....	16,985	19,596
Fort Laramie division	44,689	.....	15,511	7,325	.....	.....	39,475	107,000
Nebraska	8,550	.....	7,200	4,000	.....	.....	32,100	51,850
Wyoming	36,139	.....	8,311	3,325	.....	.....	7,375	55,150
Northport division, Nebraska	6,500	.....	500	1,400	.....	.....	6,600	15,000
Nevada: Newlands	29,438	3,253	29,432	.....	23,877	20,000	53,000	159,000
Carson division	25,378	3,253	7,852	.....	4,877	2,500	39,140	83,000
Truckee division	4,060	.....	2,080	.....	.....	2,000	13,860	22,000
Pyramid division	.....	.....	4,500	.....	[3] 19,000	1,500	.....	25,000
Lovelock division	.....	.....	15,000	.....	.....	14,000	.....	29,000
New Mexico: Carlsbad	55	.....	.....	.....	.....	.....	24,936	24,991
New Mexico-Texas Rio Grande	600	1,000	700	1,000	.....	.....	146,700	150,000
New Mexico	600	1,000	700	1,000	.....	.....	82,700	86,000
Texas	.....	.....	.....	.....	.....	.....	64,000	64,000
Divisions—								
Rincon	.....	200	.....	900	.....	.....	15,900	17,000
Leasburg	110	300	640	.....	.....	.....	29,950	31,000
Mesilla	490	500	60	100	.....	.....	45,850	47,000
El Paso	.....	.....	.....	.....	.....	.....	55,000	55,000
North Dakota:								
North Dakota pumping	254	139	.....	23	.....	.....	10,337	10,753
Oregon, Umatilla	5,360	97	2,376	.....	.....	3,319	17,148	28,300
East division	2,977	97	.....	.....	.....	1,407	12,519	17,000
West division	2,383	.....	2,376	.....	.....	1,912	4,629	11,300

[2] Includes North Platte Canal and Colonization Company lands.

[3] Three thousand acres to be allotted to about 600 Indians; remainder of land to be sold in accordance with act (33 Stat. 225).

Engineering data for projects when completed—Continued.

IRRIGABLE AREA, PRESENT STATUS—Continued.

State, project, and division.	Public land.			State land unsold.	Indian land.	Private land.		Total.
	Entered.	Open.	Withdrawn.			Railroad, unsold.	Other.	
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Oregon-California: Klamath	2,748	.....	27,300	.....	.....	.....	110,832	140,880
Oregon	2,286	.....	4,300	.....	.....	.....	101,636	108,222
California	462	.....	23,000	.....	.....	.....	9,196	32,658
Divisions—								
Main	.....	.....	.....	.....	.....	.....	.....	42,474
Tule Lake	.....	.....	.....	.....	.....	.....	.....	24,200
Pumping	.....	.....	.....	.....	.....	.....	.....	23,435
Langell Valley	.....	.....	.....	.....	.....	.....	.....	25,000
Bonanza Springs	.....	.....	.....	.....	.....	.....	.....	6,000
Lower Klamath Lake	.....	.....	.....	.....	.....	.....	.....	19,771
South Dakota: Belle Fourche	37,427	117	6,973	301	.....	.....	51,982	96,800
Utah: Strawberry Valley	1,953	.....	.....	.....	.....	.....	53,436	55,389
High Line	1,953	.....	.....	.....	.....	.....	19,307	21,260
Lake Shore	.....	.....	.....	.....	.....	.....	2,487	2,487
Mapleton	.....	.....	.....	.....	.....	.....	4,000	4,000
Power Canal	.....	.....	.....	.....	.....	.....	110	110
Santaquin	.....	.....	.....	.....	.....	.....	1,500	1,500
Spanish Fork Canyon	.....	.....	.....	.....	.....	.....	2,355	2,355
Spanish Fork	.....	.....	.....	.....	.....	.....	11,677	11,677
Springville	.....	.....	.....	.....	.....	.....	6,000	6,000
Future Divisions	.....	.....	.....	.....	.....	.....	6,000	6,000
Washington:								
Okanogan	116	.....	.....	.....	.....	.....	7,584	7,700
Gravity	.....	.....	.....	.....	.....	.....	.....	6,525
Pumping	.....	.....	.....	.....	.....	.....	.....	1,175
Yakima	7,358	.....	13,688	5,939	241	21,729	291,032	339,987
Sunnyside	2,627	.....	.....	30	241	.....	104,702	107,600
Tieton	2,048	.....	.....	4	.....	.....	29,948	32,000
Roza	120	.....	1,523	2,067	.....	11,310	43,330	58,350
Moxee	1,663	.....	775	1,332	.....	2,783	30,197	36,750
Kittitas [4]	.....	.....	4,990	1,406	.....	3,936	59,955	70,287
Kennewick	900	.....	6,400	1,100	.....	3,700	22,900	35,000
Wyoming:								
Riverton	.....	.....	69,000	.....	1,000	.....	30,000	100,000
Shoshone	64,630	1,395	176,470	7,795	.....	987	7,723	259,000
Montana	88	.....	.....	4	.....	.....	.....	92
Frannie division	88	.....	.....	4	.....	.....	.....	92
Wyoming	64,542	1,395	176,470	7,791	.....	987	7,723	258,908
Garland division	41,001	569	605	352	.....	.....	1,727	44,254
Frannie division	23,541	826	9,853	1,339	.....	987	1,708	38,254
Willwood division	.....	.....	16,312	500	.....	.....	788	17,600
Heart Mount division	.....	.....	33,100	3,200	.....	.....	2,500	38,800
Oregon Basin [5]	.....	.....	86,600	2,400	.....	.....	1,000	90,000
Chapman Bench & Sand Coulee [5]	.....	.....	30,000	.....	.....	.....	.....	30,000
INDIAN PROJECTS.								
Montana:								
Blackfeet	.....	.....	.....	.....	107,500	.....	.....	107,500
Cutbank North	.....	.....	.....	.....	9,000	.....	.....	9,000
Cutbank South	.....	.....	.....	.....	18,000	.....	.....	18,000
Two Medicine	.....	.....	.....	.....	44,000	.....	.....	44,000
Badger-Fisher	.....	.....	.....	.....	30,000	.....	.....	30,000
Piegan	.....	.....	.....	.....	3,000	.....	.....	3,000
Birch Creek	.....	.....	.....	.....	3,500	.....	.....	3,500
Flathead	43,008	.....	.....	862	34,289	.....	46,341	124,500
Camas	8,576	.....	.....	.....	337	.....	1,587	10,500
Mission Valley	34,210	.....	.....	862	26,715	.....	40,213	102,000
Jocko	222	.....	.....	.....	7,237	.....	4,541	12,000
Fort Peck	9,713	107	100	80	132,000	.....	10,000	152,000
Little Porcupine	.....	.....	.....	.....	1,865	.....	547	2,412
Poplar	.....	.....	.....	.....	21,300	.....	2,700	24,000
Big Porcupine	.....	.....	.....	.....	2,600	.....	1,400	4,000
Big Muddy	.....	.....	.....	.....	19,100	.....	900	20,000
Missouri	.....	.....	.....	.....	79,535	.....	4,053	83,588
Galpin Bottom pumping	9,713	107	100	80	.....	.....	.....	10,000
Milk River pumping	.....	.....	.....	.....	7,600	.....	400	8,000
Total, all projects	684,002	8,343	457,955	48,943	307,107	46,381	1,867,001	3,419,702
Per cent	20.0	0.2	13.4	1.4	9.0	1.4	54.6	100.0

[4] Distribution estimated.
[5] Unapproved.

Summary of crop reports on Government reclamation projects in 1921—areas (acres).[1]

State and project.	Cereals.						Other grain and seed.						Hay and forage.						
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain.)	Flaxseed.	Millet seed.	Total.	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Pasture.	Total.
Arizona: Salt River	15,830	2,908	6,377	.....	12,888	38,003	.....	.....	24,519	.....	.....	24,519	47,355	.....	5,842	.....	.....	27,070	80,267
Arizona-California: Yuma	2,145	.....	.....	.....	560	2,705	13,535	.....	9,525	.....	.....	23,060	20,550	.....	355	.....	.....	4,200	25,105
California: Orland	948	.....	.....	.....	141	1,089	.....	.....	1,939	.....	.....	1,939	5,612	.....	641	.....	84	4,247	10,584
Colorado:																			
Grand Valley	.....	863	1,383	.....	1,715	3,961	.....	.....	.....	.....	.....	.....	4,555	.....	80	1,072	1,396	.....	7,103
Uncompahgre	107	1,848	6,445	14	12,307	20,721	280	181	.....	.....	.....	461	24,015	126	343	176	351	8,019	33,030
Idaho:																			
Boise	3,200	4,985	2,465	180	26,980	37,810	1,070	5,870	.....	.....	11	6,951	43,061	7,909	54	395	.....	5,880	57,290
King Hill	39	140	55	.....	181	415	106	3	.....	.....	.....	109	3,560	16	175	34	.....	497	4,282
Minidoka—																			
Gravity division	795	934	3,004	166	11,733	16,632	182	1,897	.....	.....	.....	2,079	26,902	1,928	102	169	37	3,759	32,897
Pumping division	571	48	1,310	14	11,014	12,957	274	893	.....	.....	.....	1,167	15,868	341	.....	27	.....	1,461	17,697
Montana:																			
Huntley	247	375	1,630	.....	5,469	7,721	31	100	.....	.....	.....	131	5,538	32	.....	.....	.....	16,952	22,522
Milk River	10	113	1,045	.....	2,550	3,718	165	.....	.....	80	.....	245	3,390	.....	8,840	96	.....	.....	12,326
Sun River—																			
Fort Shaw division	126	48	461	.....	1,126	1,761	92	84	.....	.....	.....	176	5,446	35	128	.....	.....	869	6,478
Greenfields division	139	.....	965	.....	9,524	10,628	69	.....	.....	17	.....	86	922	25	463	.....	.....	160	1,570
Montana-North Dakota: Lower Yellowstone	325	490	1,513	.....	5,100	7,428	.....	56	.....	77	.....	133	7,401	32	2,280	64	1,590	477	11,844
Nebraska-Wyoming:																			
North Platte—																			
North Platte Canal & Colonization Co. lands	212	1,307	1,536	116	435	3,606	.....	.....	.....	.....	.....	.....	3,862	.....	310	.....	.....	28	4,200
Interstate division	3,413	9,462	9,504	454	4,552	27,385	77	133	.....	.....	229	439	30,980	.....	482	117	5	1,390	32,974
Fort Laramie division	10	857	2,362	.....	5,557	8,786	.....	10	.....	.....	.....	10	1,353	.....	362	5	.....	77	1,797
Northport division	12	470	301	.....	410	1,193	.....	.....	.....	.....	.....	.....	90	.....	.....	.....	.....	.....	90
Nevada: Newlands	732	.....	60	.....	2,443	3,235	.....	.....	.....	.....	.....	.....	31,217	.....	247	.....	.....	7,874	39,338
New Mexico: Carlsbad	.....	2,209	671	.....	586	3,466	1,161	.....	284	.....	.....	1,445	7,170	.....	.....	79	.....	978	8,227
New Mexico-Texas: Rio Grande	649	14,406	992	2	9,995	26,044	477	.....	281	.....	.....	758	29,919	.....	1,562	2,108	21	6,785	40,395
North Dakota: North Dakota pumping	65	71	235	.....	.....	371	.....	.....	.....	.....	.....	.....	525	77	605	92	.....	513	1,812
Oregon: Umatilla	34	116	.....	25	45	220	89	.....	.....	.....	.....	89	9,824	.....	155	62	.....	519	10,560

[1] Data are for calendar year (irrigation season), except on Salt River project, where data are for corresponding "agricultural year," October, 1920, to September, 1921.

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Summary of crop reports on Government reclamation projects in 1921—areas (acres)—Continued.

State and project.	Cereals.						Other grain and seed.						Hay and forage.						
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain.)	Flaxseed.	Millet seed.	Total.	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Pasture.	Total.
Oregon-California: Klamath	973	.....	1,998	410	3,205	6,586	.....	.....	.....	.....	.....	.....	16,375	.....	747	.....	.....	8,850	25,972
South Dakota: Belle Fourche	1,423	5,622	5,390	.....	5,341	17,776	1,810	200	.....	153	.....	2,163	25,829	.....	1,795	375	.....	7,352	35,351
Utah: Strawberry Valley	218	213	1,252	.....	7,400	9,083	.....	76	.....	.....	.....	76	11,080	210	435	86	135	3,615	15,561
Washington:																			
Okanogan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	852	.....	106	11	.....	182	1,151
Yakima—																			
Sunnyside division	453	4,177	337	102	4,970	10,039	.....	.....	.....	.....	.....	.....	41,534	.....	1,301	356	294	5,980	49,465
Tieton division	635	724	352	.....	2,442	4,153	.....	.....	.....	.....	.....	.....	13,350	.....	520	85	206	1,415	15,576
Wyoming:																			
Shoshone—																			
Garland division	166	46	2,579	20	6,204	9,015	66	657	.....	.....	.....	723	18,160	18	298	.....	.....	2,338	20,814
Frannie division	97	74	1,205	8	1,748	3,132	87	644	.....	49	3	783	4,228	258	117	17	.....	931	5,551
Total	33,574	52,506	55,427	1,511	156,621	299,639	19,571	10,804	36,548	376	243	67,542	460,523	10,998	28,345	5,426	4,119	122,418	631,829

State and project.	Vegetables and truck.						Fruits and nuts.							
	Beans.	Onions.	Potatoes, white.	Potatoes, sweet.	Truck.	Total.	Apples.	Peaches.	Pears.	Prunes.	Citrus fruit.	Small fruit.	Miscellaneous.	Total.
Arizona: Salt River	1,374	.....	630	.....	7,943	9,947	.....	.....	.....	.....	1,662	470	1,780	3,912
Arizona-California: Yuma	.....	.....	.....	.....	513	513	.....	.....	.....	.....	.....	.....	102	102
California: Orland	.....	.....	.....	.....	272	272	.....	22	.....	182	156	37	787	1,184
Colorado:														
Grand Valley	.....	.....	282	.....	120	402	257	.....	.....	.....	.....	.....	.....	257
Uncompahgre	188	365	10,806	.....	411	11,770	1,871	98	3	3	.....	49	.....	2,024
Idaho:														
Boise	50	38	5,200	20	982	6,290	1,371	105	26	600	.....	158	.....	2,260
King Hill	.....	.....	251	.....	126	377	560	.....	.....	.....	.....	3	.....	563
Minidoka—														
Gravity division	22	.....	3,533	.....	608	4,163	359	.....	.....	.....	.....	20	.....	379
Pumping division	.....	.....	6,693	.....	342	7,035	.....	.....	.....	.....	.....	.....	.....	.....

State and project.	Miscellaneous.					Duplicated areas.	Total cropped.	Irrigated, no crop.					Total irrigated.
	Beets, sugar.	Cotton.	Cane.	Other.	Total.			Young alfalfa.	Young fruit.	Fall plowing.	Miscellaneous.	Duplicated.	
Montana:													
Huntley				185	139	324							
Milk River		1		35	35	71							
Sun River—													
Fort Shaw division				217	54	271							
Greenfields division				79	12	91							
Montana-North Dakota: Lower Yellowstone		30		314	188	532							
Nebraska-Wyoming:													
North Platte—													
North Platte Canal & Colonization Co. lands				1,634	44	1,678							
Interstate division		65		9,300	422	9,787							
Fort Laramie division		1	9	653	44	707							
Northport division				43	4	47							
Nevada: Newlands				484	129	613							
New Mexico: Carlsbad					11	11							
New Mexico-Texas: Rio Grande		790	136		671	3,753	5,350	242	80	454		82	858
North Dakota: North Dakota Pumping				81		80	161						
Oregon: Umatilla				83		195	278	614	38	9	13	41	715
Oregon-California: Klamath				96		66	162						
South Dakota: Belle Fourche		19		238		159	416						
Utah: Strawberry Valley				300		181	481	60	186	2		36	284
Washington:													
Okanogan				19		92	111	4,618	14	65	6	33	4,736
Yakima—													
Sunnyside division				7,032		2,015	9,047	10,448	903	1,614	382	401	13,748
Tieton division		24	25	1,410		250	1,709	7,160	534	1,574		215	9,483
Wyoming:													
Shoshone—													
Garland division				1,820		267	2,087						
Frannie division				141		60	201						
Total		2,564	573	51,559	702	19,506	74,904	27,560	1,980	3,747	1,186	1,818	1,545	2,669	40,505
Arizona: Salt River			60,720		167	60,887	26,535	191,000				11,430		202,430
Arizona-California: Yuma			18,425			18,425	17,510	52,400						52,400
California: Orland					167	167	3,785	11,450	1,022	2,041	441		254	14,700
Colorado:														
Grand Valley		1,396			3,470	4,866	5,199	11,390	815	6	1,166	479	1,556	12,300
Uncompahgre		1,533			121	1,654	6,060	63,600	3,177	17	4,670	400	8,104	63,760
Idaho:														
Boise					154	154	7,415	103,340	6,700	35		1,425		111,500
King Hill				4	40	44	400	5,390	303	17	190			5,900
Minidoka—														
Gravity division		2,075			270	2,345	1,095	57,400	2,300	50		1,850	950	60,650
Pumping division		4,464				4,464		43,320	1,475	137		2,451	803	46,580

Summary of crop reports on Government reclamation projects in 1921—areas (acres).—Continued.

State and project.	Miscellaneous.					Duplicated areas.	Total cropped.	Irrigated, no crop.					Total irrigated.
	Beets, sugar.	Cotton	Cane	Other.	Total.			Young alfalfa.	Young fruit.	Fall plowing.	Miscellaneous.	Duplicated.	
Montana:													
Huntley	2,839			379	3,218	15,476	18,440				360		18,800
Milk River						250	16,110	290					16,400
Sun River—													
Fort Shaw division				14	14		8,700				30		[2] 8,910
Greenfields division				15	15		12,390				450		[3] 12,840
Montana-North Dakota: Lower Yellowstone	1,533		25	18	1,576	1,533	19,980						19,980
Nebraska-Wyoming:													
North Platte—													
North Platte Canal & Colonization Co. lands	1,396		8	2	1,406		10,890	966				836	11,020
Interstate division	14,845			150	14,995		85,580	4,916			803	4,919	86,380
Fort Laramie division	817		5	18	840		12,140	512			10	512	12,150
Northport division	470				470		1,800				450		2,250
Nevada: Newlands				1,448	1,448	1,194	43,440				2,720		46,160
New Mexico: Carlsbad		18,400	324	108	18,832	10,361	21,620	540			1,650		23,810
New Mexico-Texas: Rio Grande		4,542	1,587	432	6,561	2,306	77,650	270	444		7,205		85,580
North Dakota: North Dakota Pumping				16	16	400	1,960	81		6	228	195	2,080
Oregon: Umatilla				39	39	291	11,610	1,189	73	158	200	80	13,150
Oregon-California: Klamath							32,720				3,380		36,100
South Dakota: Belle Fourche	926			48	974	1,580	55,100						55,100
Utah: Strawberry Valley	5,180			715	5,895		31,380	990	9		121		32,500
Washington:													
Okanogan				54	54	722	5,330	10	310				5,650
Yakima—													
Sunnyside division	1,827			138	1,965	3,584	80,680	2,386	814		11,560	940	94,500
Tieton division	43			262	305	4,026	27,200	576	1,442		568	1,286	28,500
Wyoming:													
Shoshone—													
Garland division	1,508			23	1,531		34,170	861	62	57	102	682	34,570
Frannie division	43				43		9,710	1,280	6	711	485	1,342	10,850
Total	40,895	102,087	1,953	8,268	153,203	109,722	1,157,900	30,659	5,463	7,399	48,358	22,459	1,227,500

[2] Figures for Fort Shaw Division, Sun River project, are for 208 irrigated farms covering an irrigated acreage of 8,880, in addition to which there were irrigated in town sites 22 acres and for miscellaneous purposes 8 acres.

[3] Figures for Greenfields Division, Sun River project, are for 169 irrigated farms, all but 450 acres of which produced crops.

Summary of crop reports on Government reclamation projects in 1921—Total yields.[1]

State and project.	Cereals.						Other grain and seed.						Hay and forage.					
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain).	Flax seed.	Millet seed.	Total.	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Total.
	Bushels.	*Bushels.*	*Bushels.*	*Bush.*	*Bushels.*	*Bushels.*	*Bush.*	*Bush.*	*Bushels.*	*Bush.*	*Bush.*	*Bushels.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Arizona: Salt River	633,288	83,086	298,956		300,737	1,316,067			882,680			882,680	189,434		30,852			220,286
Arizona-California: Yuma	38,595				9,678	48,273	57,000		268,500			325,500	54,266		420			54,686
California: Orland	24,656				2,062	26,718			85,200			85,200	23,938		743		634	25,315
Colorado:																		
Grand Valley		19,256	33,215		34,835	87,306							12,035		78	1,644		13,757
Uncompahgre	2,543	60,637	185,840	235	354,273	603,528	548	531				1,079	62,520	159	517	1,683	3,423	68,302
Idaho:																		
Boise	89,600	224,325	86,275	2,520	917,320	1,320,040	4,280	35,220			264	39,764	196,358	12,245	124	3,950		212,677
King Hill	842	1,595	1,578		3,049	7,064	327	12				339	14,700	14		203		14,917
Minidoka—																		
Gravity division	33,104	33,330	129,953	5,425	341,022	542,834	765	7,711				8,476	85,940	4,029	202	1,593	819	92,583
Pumping division	16,546	1,185	41,557	160	301,070	360,518	703	3,277				3,980	41,588	699		69		42,356
Montana:																		
Huntley	5,906	7,307	35,191		93,684	142,088	136	168				304	9,564	34				9,598
Milk River	225	4,398	26,939		31,173	62,735	144			512		656	5,775		5,927	395		12,097
Sun River—																		
Fort Shaw division	1,939	1,117	11,415		17,496	31,967	76	325				401	9,793	34	113			9,940
Greenfields division	2,413		22,838		149,250	174,501	39			130		169	1,764	17	400			2,181
Montana-North Dakota:																		
Lower Yellowstone	4,925	15,199	35,255		58,318	113,697		56		572		628	13,338	64	1,532	196	242	15,372
Nebraska-Wyoming:																		
North Platte—																		
North Platte Canal & Colonization Co. lands	4,088	28,941	30,355	1,072	5,230	69,686							7,285		160			7,445
Interstate division	100,079	159,765	239,359	2,851	62,803	564,857	125	298			1,493	1,916	53,989		490	284	96	54,859
Fort Laramie division	206	15,785	48,802		66,434	131,227		50				50	2,642		397	11		3,050
Northport division	50	9,330	5,543		5,192	20,115							188					188
Nevada: Newlands	19,385		3,000		66,867	89,252							95,829		289			96,118
New Mexico: Carlsbad		42,184	9,221		6,327	57,732	2,615		5,828			8,443	21,793			151		21,944
New Mexico-Texas: Rio Grande	9,686	295,573	27,268	30	144,515	477,072	824		4,681			5,505	90,902		2,188	3,917	17	97,024
North Dakota: North Dakota Pumping	1,470	1,470	5,035			7,975							1,057	130	805	434		2,426
Oregon: Umatilla	902	3,006		200	520	4,628	241					241	36,355		191	375		36,921
Oregon-California: Klamath	21,778		72,594	5,690	68,219	168,281							48,515		817			49,332
South Dakota: Belle Fourche	18,850	110,420	88,600		54,880	272,750	1,208	1,110		200		2,518	43,238		1,552	309		45,099
Utah: Strawberry Valley	10,331	5,288	53,906		202,701	272,226		356				356	35,743	334	879	929	1,902	39,787

[1] Data are for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year," October, 1920, to September, 1921.

Summary of crop reports on Government reclamation projects in 1921—Total yields—Continued.

State and project.	Cereals.						Other grain and seed.						Hay and forage.					
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain).	Flax seed.	Millet seed.	Total.	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Total.
	Bushels.	*Bushels.*	*Bushels.*	*Bush.*	*Bushels.*	*Bushels.*	*Bush.*	*Bush.*	*Bushels.*	*Bush.*	*Bush.*	*Bushels.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Washington:																		
Okanogan													1,910		169	18		2,097
Yakima—																		
Sunnyside division	13,137	150,372	17,524	1,938	139,160	322,131							176,520		3,253	3,204	3,528	186,505
Tieton division	20,280	26,604	11,402		66,140	124,426							40,996		679	279	2,240	44,194
Wyoming:																		
Shoshone—																		
Garland division	4,744	1,014	65,219	100	137,685	208,762	9	611				620	32,920	18	186			33,124
Frannie division	742	520	14,284	32	15,088	30,666	53	1,222		120	12	1,407	8,055	245	116	10		8,426
Total	1,080,310	1,301,707	1,601,124	20,253	3,655,728	7,659,122	69,093	50,947	1,246,889	1,534	1,769	1,370,232	1,418,950	18,022	53,079	19,654	12,901	1,522,606

State and project.	Vegetables and truck.					Fruits and nuts.								Miscellaneous.			
	Beans.	Onions.	Potatoes, white.	Potatoes, sweet.	Total.	Apples.	Peaches.	Pears.	Prunes.	Citrus fruit.	Small fruit.	Miscellaneous.	Total.	Beets, sugar.	Cotton.	Cotton seed.	Cane
	Bush.	*Bush.*	*Bushels.*	*Bush.*	*Bushels.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Tons.*	*Pounds.*	*Pounds.*	*Tons*
Arizona: Salt River	21,755		73,383		95,138					11,634,000	2,240,000	8,005,500	21,879,500			51,617,100	
Arizona-California: Yuma															4,875,000	9,250,000	
California: Orland							46,200		152,200	439,800	46,500	236,500	921,200				
Colorado:																	
Grand Valley			28,279		28,279	2,086,850							2,086,850	15,482			
Uncompahgre	2,315	150,468	1,859,572		2,012,355	9,150,000	133,300	7,650	6,300		133,980		9,431,230	15,885			
Idaho:																	
Boise	575	3,040	1,352,000	4,300	1,359,915	13,710,000	840,000	182,000	3,000,000		790,000		18,522,000				
King Hill			32,733		32,733	100,100							100,100				6
Minidoka—																	
Gravity division	167		663,546		663,713	1,224,000					77,500		1,301,500	23,618			
Pumping division			1,366,270		1,366,270									46,615			
Montana:																	
Huntley			18,500		18,500									27,005			
Milk River	13		5,734		5,747												
Sun River—																	
Fort Shaw division			26,639		26,639												
Greenfields division			8,697		8,697												

Montana-North Dakota: Lower Yellowstone	420		40,732		41,152									12,784			57	
Nebraska-Wyoming:																		
North Platte—																		
North Platte Canal & Colonization Co. lands			256,428		256,428									15,513			12	
Interstate division	284		1,228,963		1,229,247									166,904				
Fort Laramie division	15	2,150	81,486		83,651									6,267			7	
Northport division			2,150		2,150									3,290				
Nevada: Newlands			93,067		93,067													
New Mexico: Carlsbad				39,100	39,100										2,700,000	5,400,000	960	
New Mexico-Texas: Rio Grande	12,029	11,513		63,629	87,171	146,690	75,725	325,799			48,270		596,484		1,315,210	153,700	5,322	
North Dakota:																		
North Dakota Pumping			9,280		9,280													
Oregon: Umatilla			5,417		6,417	1,055,630	59,840	21,500	14,500				1,151,470					
Oregon-California:																		
Klamath			15,450		15,450													
South Dakota: Belle Fourche	184		27,616		27,800									10,256				
Utah: Strawberry Valley			40,223		40,223	424,100	2,040,667	27,500			72,450		2,564,717	55,380				
Washington:																		
Okanogan			2,794		2,794	43,849,360	55,400	366,850	22,400		175,792		44,469,802					
Yakima—																		
Sunnyside division			2,109,600		2,109,600	107,718,880	3,475,647	11,602,309	2,097,562				124,894,398	9,135				
Tieton division	545	8,240	247,286		256,071	58,852,305	3,606,858	5,512,500			498,445		68,470,108	377				
Wyoming:																		
Shoshone—																		
Garland division			307,323		307,323									14,684				
Frannie division			9,872		9,872									247				
Total	38,302	175,411	9,914,040	107,029	10,234,782	238,317,915	10,333,637	18,046,108	5,292,962	12,073,800	4,082,937	8,242,000	296,389,359	423,442	8,890,210	66,420,800	6,364	

Summary of crop reports on Government reclamation projects in 1921—Total crop values.[1]

State and project.	Cereals.						Other grain and seed.					
	Barley.	Corn, Indian.	Oats.	Rye.	Wheat.	Total.	Alfalfa seed.	Clover seed.	Sorghum (grain).	Flax-seed.	Millet seed.	Total.
Arizona: Salt River	$356,225	$93,056	$138,715	.....	$360,885	$948,881	.....	.....	$551,686	.....	.....	$551,686
Arizona-California: Yuma	21,700	.....	.....	.....	10,850	32,550	$477,970	.....	155,360	.....	.....	633,330
California: Orland	13,561	.....	.....	.....	2,062	15,623	.....	.....	59,640	.....	.....	59,640
Colorado:												
Grand Valley	.....	13,468	14,754	.....	27,308	55,530	.....	.....	.....	.....	.....	.....
Uncompahgre	1,213	34,528	65,368	$141	241,586	342,836	3,259	$3,013	.....	.....	.....	6,272
Idaho:												
Boise	40,320	112,164	30,198	1,134	687,990	871,806	30,816	274,716	.....	.....	$211	305,743
King Hill	510	1,828	1,368	.....	3,697	7,403	2,388	576	.....	.....	.....	2,964
Minidoka—												
Gravity division	13,242	23,331	32,488	4,340	272,820	346,221	6,885	69,400	.....	.....	.....	76,285
Pumping division	6,628	830	10,389	128	240,858	258,833	6,327	29,493	.....	.....	.....	35,820
Montana:												
Huntley	2,707	4,991	13,873	.....	94,520	116,091	607	744	.....	.....	.....	1,351
Milk River	90	4,398	10,775	.....	34,290	49,553	2,592	.....	.....	$793	.....	3,385
Sun River—												
Fort Shaw division	970	670	5,708	.....	15,750	23,098	914	2,603	.....	.....	.....	3,517
Greenfields division	1,206	.....	11,420	.....	134,325	146,951	468	.....	.....	175	.....	643
Montana-North Dakota: Lower Yellowstone	1,970	8,360	14,102	.....	58,320	82,752	.....	140	.....	858	.....	998
Nebraska-Wyoming:												
North Platte—												
North Platte Canal & Colonization Co. lands	1,432	10,129	7,589	536	3,922	23,608	.....	.....	.....	.....	.....	.....
Interstate division	35,028	55,918	59,840	1,430	47,102	199,318	1,125	2,682	.....	.....	1,493	5,300
Fort Laramie division	72	5,525	12,200	.....	49,824	67,621	.....	450	.....	.....	.....	450
Northport division	24	2,800	1,940	.....	4,676	9,440	.....	.....	.....	.....	.....	.....
Nevada: Newlands	10,660	.....	1,440	.....	60,180	72,280	.....	.....	.....	.....	.....	.....
New Mexico: Carlsbad	.....	18,308	4,546	.....	6,122	28,976	17,132	.....	2,388	.....	.....	19,520
New Mexico-Texas: Rio Grande	7,074	211,725	22,834	40	171,584	413,257	3,353	.....	3,541	.....	.....	6,894
North Dakota: North Dakota Pumping	705	882	1,760	.....	.....	3,347	.....	.....	.....	.....	.....	.....
Oregon: Umatilla	622	2,465	.....	200	582	3,869	2,892	.....	.....	.....	.....	2,892
Oregon-California: Klamath	11,542	.....	26,859	3,186	61,397	102,984	.....	.....	.....	.....	.....	.....
South Dakota: Belle Fourche	7,540	55,210	28,352	.....	49,293	140,395	14,496	2,220	.....	250	.....	16,966
Utah: Strawberry Valley	5,682	3,173	24,258	.....	152,025	185,138	.....	1,780	.....	.....	.....	1,780
Washington:												
Okanogan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yakima—												
Sunnyside division	5,255	90,223	7,010	1,744	132,204	236,436	.....	.....	.....	.....	.....	.....
Tieton division	11,154	14,632	4,560	.....	62,833	93,179	.....	.....	.....	.....	.....	.....
Wyoming:												
Shoshone—												
Garland division	1,898	406	20,870	100	117,032	140,306	32	1,833	.....	.....	.....	1,865
Frannie division	297	208	4,571	32	12,825	17,933	191	3,666	.....	156	43	4,056
Total	559,327	769,228	577,787	13,011	3,116,862	5,036,215	571,447	393,316	772,615	2,232	1,747	1,741,357

[1] Data are for calendar year (irrigation season), except on Salt River project, where data are for corresponding "agricultural year," October, 1920, to September, 1921.

State and project.	Hay and forage.							Vegetables and truck.					
	Alfalfa hay.	Clover hay.	Other hay.	Corn fodder.	Other forage.	Pasture.	Total.	Beans.	Onions.	Potatoes, white.	Potatoes, sweet.	Truck.	Total.
Arizona: Salt River	$1,894,340	.....	$257,331	.....	.....	$406,038	$2,557,709	$78,318	.....	$154,105	.....	$1,091,666	$1,324,089
Arizona-California: Yuma	430,378	.....	2,287	.....	.....	34,000	466,665	.....	.....	.....	.....	42,890	42,890
California: Orland	239,380	.....	8,173	.....	$6,340	32,611	286,504	.....	.....	.....	.....	25,260	25,260
Colorado:													
Grand Valley	93,112	.....	333	$3,100	4,205	.....	100,750	.....	.....	21,004	.....	10,709	31,713
Uncompahgre	332,335	$804	2,476	1,821	17,903	27,814	383,153	8,746	$213,945	1,252,310	.....	43,658	1,518,659
Idaho:													
Boise	785,432	48,980	496	15,800	.....	117,600	968,308	2,070	4,560	1,352,000	$8,600	196,725	1,563,955
King Hill	62,810	66	1,682	567	.....	1,292	66,417	.....	.....	32,853	.....	7,020	39,873
Minidoka—													
Gravity division	429,700	16,116	606	4,779	4,095	50,800	506,096	501	.....	464,482	.....	48,400	513,383
Pumping division	207,940	2,796	.....	207	.....	16,895	227,838	.....	.....	956,389	.....	9,560	965,949
Montana:													
Huntley	76,234	296	.....	.....	.....	31,461	107,991	.....	.....	15,065	.....	11,939	27,004
Milk River	28,875	.....	35,566	1,580	.....	.....	66,021	32	.....	5,734	.....	5,105	10,871
Sun River—													
Fort Shaw division	58,758	170	613	.....	.....	3,921	63,462	.....	.....	21,311	.....	5,400	26,711
Greenfields division	12,348	102	2,870	.....	.....	444	15,764	.....	.....	7,827	.....	1,400	9,227
Montana-North Dakota: Lower Yellowstone	86,695	256	6,128	784	5,965	3,115	102,943	1,050	.....	24,440	.....	13,463	38,953
Nebraska-Wyoming:													
North Platte—													
North Platte Canal & Colonization Co. lands	32,782	.....	800	.....	.....	168	33,750	.....	.....	166,675	.....	2,200	168,875
Interstate division	242,950	.....	2,450	568	384	8,340	254,692	426	.....	798,826	.....	17,172	816,424
Fort Laramie division	11,889	.....	1,985	22	.....	162	14,358	22	6,450	52,966	.....	4,050	63,488
Northport division	1,130	.....	.....	.....	.....	.....	1,130	.....	.....	1,290	.....	350	1,640
Nevada: Newlands	958,290	.....	2,890	.....	.....	54,420	1,015,600	.....	.....	111,680	.....	14,692	126,372
New Mexico: Carlsbad	183,766	.....	.....	755	.....	5,573	190,094	.....	.....	.....	2,465	.....	2,465
New Mexico-Texas: Rio Grande	1,251,356	.....	17,363	15,120	1,050	67,255	1,352,144	29,537	15,749	.....	75,825	246,169	367,280
North Dakota: North Dakota Pumping	10,570	1,300	7,770	3,470	.....	3,750	26,860	.....	.....	9,280	.....	11,268	20,548
Oregon: Umatilla	249,760	.....	1,547	2,044	.....	8,125	261,476	.....	.....	7,572	.....	19,946	27,518
Oregon-California: Klamath	242,575	.....	4,085	.....	.....	53,100	299,760	.....	.....	19,306	.....	9,900	29,206
South Dakota: Belle Fourche	216,190	.....	7,610	1,545	.....	36,760	262,105	460	.....	27,616	.....	8,940	37,016
Utah: Strawberry Valley	357,430	3,340	8,790	4,645	11,412	12,600	398,217	.....	.....	32,178	.....	18,905	51,083
Washington:													
Okanogan	22,920	.....	2,028	180	.....	1,802	26,930	.....	.....	3,350	.....	15,240	18,590
Yakima—													
Sunnyside division	1,412,160	.....	29,277	12,816	24,696	89,700	1,568,649	.....	.....	1,476,740	.....	403,000	1,879,740
Tieton division	368,964	.....	6,111	558	10,080	28,300	414,013	1,308	14,832	160,735	.....	25,000	201,875
Wyoming:													
Shoshone—													
Garland division	164,600	90	744	.....	.....	18,077	183,511	.....	.....	184,394	.....	19,365	203,759
Frannie division	40,275	1,225	464	30	.....	3,663	45,657	.....	.....	5,923	.....	3,782	9,705
Total	10,505,944	75,541	412,475	70,391	86,130	1,118,086	12,268,567	122,470	255,536	7,366,051	86,890	2,333,174	10,164,121

Summary of crop reports on Government reclamation projects in 1921—Total crop values—Continued.

State and project.	Fruits and nuts.								Miscellaneous.					Grand total.
	Apples.	Peaches.	Pears.	Prunes.	Citrus fruit.	Small fruit.	Miscellaneous.	Total.	Beets, sugar.	Cotton and cotton seed.	Cane.	Other.	Total.	
Arizona: Salt River					$639,870	$225,570	$280,192	$1,145,632		$4,903,625		$3,758	$4,907,383	$11,435,380
Arizona-California: Yuma							10,000	10,000		857,625		55,000	912,625	2,098,060
California: Orland		$1,647		$10,654	23,832	3,875	47,400	87,408				21,375	21,375	495,810
Colorado:														
Grand Valley	$46,473							46,473	$100,630			21,634	122,264	356,730
Uncompahgre	245,660	6,902	$210	469		10,638		263,879	89,922			9,579	99,501	2,614,300
Idaho:														
Boise	324,927	33,600	7,280	54,000		55,300		475,107				19,021	19,021	4,203,940
King Hill	2,290					190		2,480			$60	13	73	119,210
Minidoka—														
Gravity division	24,480					2,325		26,805	141,710			30,640	172,350	1,641,140
Pumping division									279,700				279,700	1,768,140
Montana:														
Huntley									183,359			4,974	188,333	440,770
Milk River														129,830
Sun River—														
Fort Shaw division												652	652	117,440
Greenfields division												355	355	172,940
Montana-North Dakota: Lower Yellowstone									74,786		228	3,560	78,574	304,220
Nebraska-Wyoming:														
North Platte—														
North Platte Canal & Colonization Co. lands									104,713		24	10	104,747	330,980
Interstate division									1,126,602			4,584	1,131,186	2,406,920
Fort Laramie division									42,302		14	697	43,013	188,930
Northport division									23,690				23,690	35,900
Nevada: Newlands												40,328	40,328	1,254,580
New Mexico: Carlsbad										666,900	5,215	6,480	678,595	919,650
New Mexico-Texas: Rio Grande	8,103	4,375	16,622			5,320		34,420		260,045	35,142	24,528	319,715	2,493,710
North Dakota: North Dakota Pumping												3,565	3,565	54,320
Oregon: Umatilla	36,948	3,172	1,075	725		4,542		46,462				1,673	1,673	343,890
Oregon-California: Klamath														431,950
South Dakota: Belle Fourche									56,408			860	57,268	513,750
Utah: Strawberry Valley	10,602	61,220	825			6,203		78,850	304,590			932	305,522	1,020,590

Washington:														
Okanogan	1,973,221	2,216	9,171	1,120	.....	10,557	.....	1,996,285	.....	.....	.....	9,465	9,465	2,051,270
Yakima—														
Sunnyside division	3,231,566	139,026	348,070	104,878	.....	130,325	.....	3,953,865	54,810	.....	.....	103,500	158,310	7,797,000
Tieton division	2,059,836	144,270	124,031	.....	.....	49,844	.....	2,377,981	2,262	.....	.....	77,100	79,362	3,166,410
Wyoming:														
Shoshone—														
Garland division	.....	.....	.....	.....	.....	.....	.....	.....	102,788	.....	.....	1,231	104,019	633,460
Frannie division	.....	.....	.....	.....	.....	.....	.....	.....	1,729	.....	.....	.....	1,729	79,080
Total	7,964,106	396,428	507,284	171,846	663,702	504,689	337,592	10,545,647	2,690,001	6,688,195	40,683	445,514	9,864,393	49,620,300

WARREN ACT CONTRACTS.

Contracts under Warren Act.

GRAND VALLEY PROJECT, COLORADO.

Name of contractor.	Date of contract.	Area in acres.	Amount of water.
			Second-feet.
Orchard Mesa irrigation district	Feb 18, 1922	10,000	400
Total from previous years (2 contracts)		8,400	120
Grand total		18,400	520

UNCOMPAHGRE PROJECT, COLORADO.

Daly, J. A.	May 4, 1921	7	0.12
Keller, Lena	Sept. 29, 1921	78	1.30
Marks, Constant R., jr., et al	Dec. 10, 1921	14	.23
Prather, Bertie L	Sept. 30, 1921	27	.45
Smith, Clara B	Sept. 30, 1921	14	.23
Tobin, John J., et al	Dec. 30, 1921	39	.65
Total		179	2.98
Total from previous years (3 contracts)		461	8.32
Grand total		640	11.30

BOISE PROJECT, IDAHO.

			Acre-feet.
Boise-Mora and Hillcrest irrigation districts	Sept. 16, 1921	14,100.00	23,000.00
Emmett irrigation district	Nov. 18, 1921	22,500.00	120,000.00
Total		36,600.00	143,000.00
Total from previous years (14 contracts)		176,360.44	187,847.35
Grand total		212,960.44	330,847.35

MINIDOKA PROJECT, IDAHO.

AMERICAN FALLS.[1]			
No contracts during past year.			
Total from previous years (24 contracts)		499,569	333,520
JACKSON LAKE.			
(Temporary rental contracts—season of 1921.)			
Bloom, Jacob	July 20, 1921		50
Boden, Ernest	Aug. 8, 1921		62
Fact, O. E	July 25, 1921		50
Hansten, Christian	July 15, 1921		100
Harward, L. J.	July 1, 1921		50
Idaho Falls	July 24, 1921		350
Milner Low Lift irrigation district	July 15, 1921		1,947
Do	July 26, 1921		272
Do	Aug. 5, 1921		106
Do	Aug. 15, 1921		216
Peterson, Miralda	May 3, 1921		
Simpson, J. S	July 20, 1921		50
Utah Power & Light Co	July 22, 1921		100
Vance, S. E., jr	July 2, 1921		150
Do	July 15, 1921		150
Do	July 23, 1921		400
Do	July 28, 1921		400
Do	Aug. 1, 1921		250
Do	Sept. 10, 1921		107
Total			4,810
Total from previous years (22 contracts)		846,900	522,916
Grand total		846,900	527,726

[1] Contracts in connection with construction of American Falls Dam; no water furnished.

Contracts under Warren Act—Continued.

NORTH PLATTE PROJECT, NEBRASKA-WYOMING.

Name of contractor.	Date of contract.	Area in acres.	Amount of water.
			Second-feet.
Lingle Water Users' Association	May 10, 1922	2,488	4,050
Dawson County Irrigation Co	May 1, 1922	(2)	2,500
Total			6,550
Total from previous years (11 contracts)		122,135	340,572
Grand total			347,122

KLAMATH PROJECT, OREGON-CALIFORNIA.

Geary Investment Co. et al	Aug. 10, 1921	4,193.74	(3)
Klamath drainage district	Aug. 24, 1921	27,500.00	(3)
Langell Valley and Horsefly irrigation districts	Mar. 27, 1922	8,350.00	16,700
Total		40,043.74	
Total from previous years (3 contracts)		8,334.00	16,668
Grand total		48,377.74	

BELLE FOURCHE PROJECT, SOUTH DAKOTA.

No contracts during past year.			
Total from previous years (2 contracts)		54.8	

STRAWBERRY VALLEY PROJECT, UTAH.

No contracts during past year.			
Total from previous years (8 contracts)		29,060.00	22,135.00

YAKIMA PROJECT, WASHINGTON.

Broadway Irrigation Co	Dec. 1, 1921	(4) 400.00	700.00
Yakima-Benton irrigation district	July 8, 1921	(3)	285,000.00
Yakima irrigation district	Nov. 3, 1921	(3)	160,000.00
Total			445,700.00
Total from previous years (12 contracts)		144,850.27	481,759.75
Grand total			927,459.75

[2] Not known. [3] Undetermined. [4] Estimated.

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